



**SP 00**  
**SAFETY PROCEDURE**  
**PPL EU Safety Program**

Custom ID: SP 00

# PPL EU Safety Program

## Summary Statement:

The PPL EU Safety Program is a program document that references all aspects of the safety program and outlines how all the pieces work together to successfully manage safety at PPL. The Safety Operations manager maintains this program document and updates it as necessary with the Safety Operations team. Annual reviews are conducted by the safety operations team to ensure accuracy and alignment with other company documents, resources, procedures etc... Safety Procedures are kept in alignment with the pillars and elements within this program.



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\*The *PPL EU Safety Program* is an interim document that receives frequent updates via the safety operations team until 12/31/2021.



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## **Safety Program Pillars**

There are six (6) key Safety Program Pillars that contain elements within them:

- **Engagement**
- **Compliance**
- **Hazard Mitigation**
- **Learning**
- **Emergency Response**
- **Contractor Safety**

### **1. Engagement**

The engagement pillar has two elements: (1) Management Commitment, (2) Employee Involvement. The management commitment and employee involvement pillar focuses on involving our most important resource, our employees.

This is accomplished through management making safety the number one value in every aspect of work and involving employees at every level of the organization. Here we will ensure every employee has an opportunity to



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contribute to safety in a fulfilling way. In this section management plans and executes for safety and employees have an opportunity to contribute to the success of the safety program.

## **2. Compliance**

The compliance pillar has two elements: (1) Regulatory, (2) Safety Rules and Procedures. This pillar primary focuses on how the company ensures it remains in compliance with various regulations. The safety team is responsible to monitor regulatory bodies (i.e. OSHA, PUC, DOT, NESC, etc.) for changes that may impact PPL Electric Utilities and take the necessary steps to align our internal safety rules, procedures, and processes to comply with those regulatory changes.

## **3. Hazard Mitigation**

The hazard mitigation pillar has eight elements: (1) Hazard Assessment, (2) Human Performance, (3) Illness Prevention, (4) Industrial Hygiene, (5) Injury Prevention, (6) Corrective Actions (7) PPE, (8) Vehicle and Equipment Operations. The hazard prevention pillar focuses on keeping our employees safe by providing up-to-date communications regarding hazards that are identified. As new and improved technology and design comes out with PPE, we strive to provide our employees with the safest tools to perform their job safely. PPL takes pride in being proactive when it comes to correcting observed hazards in the workplace to avoid injuries.





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### **4. Learning**

The learning pillar has two elements: (1) Training (2) Communications. Safety education and training is the foundation to ensuring employees have the skills and knowledge to perform their work safely and to the best of their ability. PPL employees are provided the training and information they need to prevent work-related injuries and illnesses by making them aware of workplace hazards and how to identify, analyze, and control them. At PPL, safety education and training are comprised of on-the-job training, classroom learning, computer-based training, practical performance evaluation, safety communications and daily safety messaging. As a learning organization, we strive to transfer new knowledge quickly and efficiently throughout the organization as new information comes to light from new technology, tools, equipment, regulatory changes, and learning from our own experience and from the experiences and best practices of others. This new information is incorporated into our ever-changing training program content to drive continuous improvement.

### **5. Emergency Response**

The emergency response pillar has one element: (1) Emergency Response. Due to the hazardous nature of the work many PPL EU employees are performing, ensuring there are processes in place to respond to an emergency is essential to minimize any impacts. Each process related to Emergency response will be covered within this section later in this document.



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## 6. Contractor Safety

The Contractor Safety pillar has one element: (1) Contractor Safety. The contractor safety pillar focuses on providing safety oversight for our customers, and our contractor employees. The safety of our customers and anyone performing work on our property is paramount. Each of the elements within this pillar have multiple programs in place that guide their governance.



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## Safety Program Elements

Within the six (6) pillars falls 16 key Safety Program Elements. The 16 program elements will be broken down in more detail in the following section.

### Engagement Pillar

#### 1. Management Commitment Element

Management sets the overall importance for safety by setting expectations, planning for success and allowing employees to participate in the process. Company Leadership creates the vision for the company in the Safety Mindset and communicates it to the organization. Frontline leadership creates safety plans for their respective workgroups to improve safety Management supports employees who participate in the safety process.

1.1. Safety Plans- Workgroups create safety plans and work on them throughout the year to accomplish the objectives of their plan.

1.2. Safety Mindset (**Appendix A**)- Senior Leadership sets the vision in the Safety Mindset that establishes safety as a core value of the business.

1.3. Safety Meetings- Management facilitates safety meetings and supports employee involvement in safety meetings. Leadership has the general expectation that each company meeting contains a safety message element.



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Structured safety meetings are expected to be held monthly with employee groups.

1.4. Frequent Event Mitigation (Safety Procedure 04)- Frontline management identifies employees who have multiple events so they can work with them to proactively prevent future issues.

## **2. Employee Involvement Element**

Employees have various ways to get involved in safety. They can participate on EHS Committees, serve as a Bargaining Unit Safety Advocate, propose a tool or equipment through the Tool & Equipment process or serve as Bargaining Unit Trainers. These items allow the employees to work closely with their management groups to identify opportunities to improve safety across the company.

2.1. Bargaining Unit Safety Advocates (Union Contract MA 16-0040)- Bargaining unit employees who, for 6-months, observe peers to help promote safety in their workgroups.

2.2. EHS Committees (Union Contract Article VIII, Section 8)- Members of these committees are appointed by Local 1600 President and work closely with management to identify opportunities to promote worker safety and serve as a conduit for employees to raise and address safety issues. Each EHS committee establishes an agreed upon charter.



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2.3. Tool & Equipment Process (DDI T-105)- This process is designed to give key stakeholders control over the procurement and evaluation of tools employees use on the job.

2.4. Bargaining Unit Trainers (Union Contract MA 03-0120)- Employees can use their knowledge and experience to serve as trainers to help co-workers gain and hone the skills in their trade.

## **Compliance Pillar**

### **1. Regulatory Element**

Several regulatory bodies apply to PPL EU: OSHA, NESC, FMCSA, PUC to name a few. The Safety Manager is responsible to keep a close eye on these agencies and monitor for new regulations that may impact PPL. There are processes both within the safety department and other departments that are implemented to ensure PPL EU remains in compliance with various regulations. The safety team is responsible for OSHA injury and illness recordkeeping, auditing energy control permits (SP 07), monitoring DOT safety, and ensuring quantities of certain chemicals within our facilities do not exceed screening thresholds (SP 56). Reporting applicable incidents to the PUC falls within the responsibility of the Distribution Control Center (DCC).

1.1. Regulation Watch – The safety team periodically monitors various regulatory agencies for new or changes to regulations.



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- 1.2. OSHA recordkeeping – OSHA requires employers to properly record injuries and illness that result in treatment beyond first aid. The safety team ensures PPL's injury and illness records are in compliance.
- 1.3. Safety Procedure (SP) 07 – Audit of Permits – OSHA requires auditing of a company's energy control procedures to ensure they applied appropriately to protect the company's employees. The safety team developed SP 07 to ensure permits were audited and in compliance.
- 1.4. Commercial vehicle safety – Both federal and state Department of Transportations apply to PPLs commercial vehicle fleet. SP 28 along with the Federal Motor Carrier Safety Administration (FMCSA) Portal service as references for PPL commercial fleet safety.
- 1.5. Safety Procedure (SP) 56 – Chemical Terrorism – SP 56 is designed to ensure that Chemicals of Interest (COI) on the properties of PPL Electric Utilities remain, to the extent practicable, below their corresponding Screening Threshold Quantities (STQs) and that no PPL Electric Utility facility will be a CFATS covered facility.
- 1.6. Standard Operating Procedure (SOP) 018 – SOP 018 outlines the reporting requirements for employee and non-employee injuries, to the Public Utility commission (PUC). This procedure is owned by the DCC but supported by the Safety team.



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### **2. Safety Procedures and Safety Rules Element**

Safety Procedures and Safety Rules are developed and communicated to ensure our employees have the applicable information to remain in compliance with both internal and external requirements. These procedures and rules often align with various OSHA and other regulatory requirements. The safety operations team is responsible to keep both the safety procedures and safety rules current.

2.1. Safety Procedures – Safety Procedures are designed to take regulatory requirements and write them, so they are made applicable to PPL EU. Safety procedures are referenced throughout this document.

2.2. Safety Rules – Safety Rules basically state what is allowed or not allowed. They do not explain how to comply. Often, safety rules will be linked to safety procedures as well as referenced in various work procedures and training documents. A safety rule book is available electronically and updated periodically. Changes are communicated when changes are made.

## **Hazard Mitigation Pillar**

### **1. Hazard Assessment Element**

Hazards are assessed and identified through routine and prompted safety assessments. Findings and investigations are tracked through PPL's internal tracking software CCATS. Investigations are conducted and lead by supervisors, but the safety team is responsible for supporting investigations. The safety team



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is responsible to support all the regions and super regions with hazard assessing and tracking.

- 1.1. Safety Procedure (SP) 30 - Job Hazard Analysis - SP 30 outlines how PPL conducts its Job Hazard Analysis for all job functions.
- 1.2. Safety Procedure (SP) 39 – Tailboard Conference Job Safety Planning – OSHA requires tailboarding/job briefing for the electric utilities industry. The safety team monitors the compliance factors of this SP and updates it as needed.

## **2. Human Performance Element**

Human Performance is led by the experience assessment team at PPL and supported by the safety operations team. Human performance is deeply rooted within PPL's daily operations. HuP skills are intertwined into the training that employees participate in.

- 2.1. HuP Handbook – The Human Performance handbook provides a reference to employees for HuP definitions and system 1 & system 2 processes.
- 2.2. Section 0 Safety Rulebook – SRB section 0 outlines HuP tools and provides guidance to employees on how to utilize them.





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### **3. Illness Prevention Element**

PPL strives to prevent illnesses from occurring at the workplace. Internal communications that provide guidance and best practices for prevention are issued on PPL's SKY website and available for all employees to access. Employee trainings are an annual compliance part of the illness prevention strategy. The safety operations team creates the content for the illness prevention communications and tracks all work-related illnesses on the annual OSHA 300 log in collaboration with health services.

- 3.1. Safety Procedure (SP) 11 - Hazard Communication and Chemical Approval Process - This procedure gives instruction how to ensure compliance with OSHA regulations with hazardous chemicals. The company SDS inventory is tracked through a 3<sup>rd</sup> party service SafeTec and is accessible to all employees through the Safety SharePoint site.
- 3.2. Safety Procedure (SP) 16 – Telecommunications - This procedure helps employees understand the hazards that are involves when working on or near radio frequency radiation.
- 3.3. Safety Procedure (SP) 24 – Ergonomics - This procedure aligns with OSHA's general duty clause to keep PPL free from recognized hazards such as ergonomic stresses.
- 3.4. Safety Procedure (SP) 26 – Bloodborne Pathogens - This procedure provides guidance on OSHA's standards for bloodborne pathogens.



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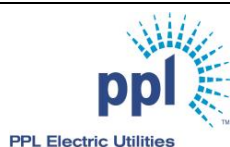
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- 3.5. Safety Procedure (SP) 43 – Hantavirus Rodent Cleanup - This procedure gives guidance on handling rodent infestations that may occur at company facilities.
- 3.6. Safety Procedure (SP) 55 – Tick Bite and Lyme Disease Prevention – This procedure gives guidelines for the prevention of tick bites and the proper steps to take after identifying a tick bite.
- 3.7. COVID Protocols – PPL has a SharePoint site called Workplace Evolution that is used to communicate all COVID related protocols, procedures, and future guidance about returning to work safely.

#### **4. Industrial Hygiene Element**

PPL stays in compliance with OSHA regulations that encompass industrial hygiene. There is a documented industrial hygiene plan. The safety operations team supports the overall compliance efforts with industrial hygiene.

- 4.1. Safety Procedure (SP) 22 – Lead - This procedure is used to comply with OSHA standard that relates to working with lead in the workplace.
- 4.2. Safety Procedure (SP) 25 – Indoor Air Quality - This procedure establishes guidelines for the maintenance of indoor air quality in non-industrial work settings.
- 4.3. Safety Procedure (SP) 27 – Heat Stress - This procedure gives guidance in recognizing and dealing with potential heat stress conditions.



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- 4.4. Safety Procedure (SP) 41 – Asbestos - This procedure gives guidance on best practices for controlling exposure to asbestos to comply with OSHA standards.
- 4.5. Safety Procedure (SP) 45 – Industrial Hygiene Plan – This procedure plan is to define the requirements that provide a safe and healthy work environment free from hazardous substances that may cause illness.
- 4.6. Safety Procedure (SP) 48 – Hexavalent Chromium - This procedure gives guidance on assuring health protection to employees from exposures to hexavalent chromium.
- 4.7. Safety Procedure (SP) 62 – Respirable Crystalline Silica Exposure - This procedure establishes safety requirements to be followed by employees who perform work that may expose them to respirable crystalline silica above permissible exposure limits.

## **5. Injury Prevention Element**

One of PPL's main focuses with its safety program is to prevent injuries from occurring. PPL contracts with certified athletic trainers to support its employees' overall wellbeing. The safety operations team issues many communications to all employees to focus on preventing injuries. The safety operations team also manages the company safety rulebook which guides employees how perform their functions safely. The safety operations team tracks all work-related illnesses on the annual OSHA 300 log in collaboration with health services.



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- 5.1. Safety Procedure (SP) 01 – Work Zone Protection - This procedure defines work zone traffic control measures on roadways and highways.
- 5.2. Safety Procedure (SP) 02 – Fall Protection – This procedure establishes the requirements for fall protection that all employees shall follow.
- 5.3. Safety Procedure (SP) 03 – Confined Space - This procedure provides requirements for working in confined and enclosed spaces.
- 5.4. Safety Procedure (SP) 05 – Grounding & Bonding - This procedure provide instruction for safely applying temporary grounding and bounding techniques.
- 5.5. Safety Procedure (SP) 06 – Energy Control Process - This procedure provides guidelines for control of hazardous energy sources.
- 5.6. Safety Procedure (SP) 10 – Fan Guards - This procedure outlines how to work safely around cooling fans.
- 5.7. Safety Procedure (SP) 12 – Hot work - This procedure gives guidance on reducing or eliminating the potential for injury or damage that can result from fires or explosions when hot work is being performed.
- 5.8. Safety Procedure (SP) 14 – Scaffolds - This procedure establishes safety requirements when erecting/dismantling/using scaffolding.



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- 5.9. Safety Procedure (SP) 18 – Excavating, Trenching, and Shoring - This procedure establishes safety requirements to be followed when employees engage in trenching and excavation work.
- 5.10. Safety Procedure (SP) 20 – Rigging - This procedure helps ensure that riggers meet minimum safety qualifications.
- 5.11. Safety Procedure (SP) 35 – Ladders - This procedure gives guidelines on federal requirements and gives guidance on proper care and use of handling ladders.
- 5.12. Safety Procedure (SP) 44 – Underground Cable Locating - This procedure ensures that PPL employees are trained on the proper use of cable locating equipment.
- 5.13. Safety Procedure (SP) 51 – Electrical Safe Work Practices - This procedure establishes electrical safety requirements when working on or near exposed energized equipment.
- 5.14. Safety Procedure (SP) 52 – Powder Actuated Tools – This procedure establishes the safety requirements for inspecting and using powder actuated tools.
- 5.15. Safety Procedure (SP) 64 – Walking Working Surfaces - This procedure establishes requirements for safe conditions of walking working surfaces.



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- 5.16. Operating Instruction (OI)-153 & (OI) 154 – This instruction outlines a permit holder’s responsibilities.
- 5.17. Health Services – PPL staffs registered nurses that manage injuries and communications with emergency services pertaining to employee injury/illness records.
- 5.18. Occupational Athletics (OA) – This is the 3<sup>rd</sup> party service contracted with PPL to promote active stretching & proactive ergonomic assessments.

**6. Corrective Actions Element**

There are times that safety related incidents or observations occur, and they are documented appropriately. PPL has structured documentation methods for when incidents occur, as well as various tutorials on how to fill them out and resolve any issues that may exist or be observed. Corrective and positive observations are documented and recognized by the company.

- 6.1. Safety Behavior Observation & Feedback Program (TDI002 Safety Behavior Observation & Feedback) – Employees perform safety observations to monitor and inspect the workplace for safe and unsafe conditions and behaviors and provide feedback. These observations are documented to identify problems and trends to prevent incidents.
- 6.2. Event Analysis Process (TDI SPO – Experience Assessment) - A process to focus on a loss incident, near miss, or other important learning opportunity, to



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identify effective solutions to reduce or eliminate risk and prevent more incidents from occurring.

- 6.3. Incident Reporting and Analysis Process (Safety Procedure 31, GP 100) – Employee's report work-related loss or near miss incidents to ensure they are recorded properly, and an effective event analysis is performed. Employee's must also report work-related injuries and illnesses for workers compensation purposes. Loss incidents and near miss incidents are reported on the 0830 daily operations call.
- 6.4. Good Catch Program (TDI SPO – Experience Assessment) – This program provides a way for employees to identify and submit good catches regarding problems and unsafe conditions and behaviors and help correct or change them. Good catches help identify where potential issues may exist before a negative outcome occurs.

## **7. Personal Protective Equipment (PPE) Element**

PPL provides personal protective equipment to its employees depending on their job tasks. PPL follows ANSI guidelines on PPE that it provides to employees. All employees are trained on the proper use of PPE when applicable to their jobs. The safety operations team governs the tool & equipment approval process for new PPE approvals.

- 7.1. Safety Procedure (SP) 08 – Eye Protection – This procedure ensures that proper eye PPE is worn when required.



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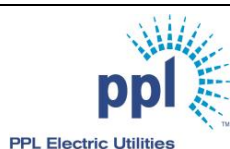
- 7.2. Safety Procedure (SP) 29 – PPE - This procedure gives guidance on the required PPE to be used by PPL employees.
- 7.3. FR Clothing - Fire Resistant clothing is provided to employees who are required to wear them. Exhibit N in the union contract outlines primary and secondary users, as well as allocated articles of clothing.
- 7.4. General Procedure (GP) 512 – Safety Shoes and Prescription Safety Glasses – This procedure provides guidance on how employees shall order their necessary PPE.
- 7.5. Seasonal PPE Reminders – Communications are made available on the Safety SharePoint site for seasonal PPE that is cataloged for PPL employees.

**8. Vehicle and Equipment Operations Element**

PPL focuses on safe driving techniques being utilized. CDL & DOT guidelines are followed to stay in compliance. The safety operations team creates guidance in the form of safety procedures on how to operate vehicles safely and in a compliant manner.

- 8.1. Safety Procedure (SP) 28 – Commercial Driver's License (CDL) - This procedure helps ensure PA employees who operate a commercial company vehicle are identified and participate in required medical examinations.





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- 8.2. Safety Procedure (SP) 33 – Powered Industrial Trucks – This procedure gives guidelines on the safety and training requirements for PPL employees to operate a powered industrial truck.
- 8.3. Safety Procedure (SP) 37 – Operational Instruction Specific Equipment – This procedure ensures that PPL employees receive an operational instruction on specific equipment.
- 8.4. Safety Procedure (SP) 38 – Circle For Safety - This procedure is designed to increase vehicle safety at PPL.
- 8.5. Safety Procedure (SP) 54 – Use of Electronic Communications and Data Devices in Vehicles on Company Business – This procedure gives guidelines on how to establish a distraction free and injury free work environment with the respect of electronic devices.
- 8.6. Safety Procedure (SP) 57 – Using Mobile Cranes in Construction - This procedure complies with OSHA standards in regard to the use of mobile cranes.
- 8.7. General Procedure (GP) 101 & CP 202 – Drug & Alcohol Program – These procedures outline the drug & alcohol testing procedures for PPL.
- 8.8. General Procedure (GP) 203 – Vehicle Parking - This procedure outlines how PPL employees are expected to follow parking signage.



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- 8.9. General Procedure (GP) 503 – Use of Personal Vehicles on Company Business  
- This procedure gives guidance on the use of personal vehicles when conducting company business.
- 8.10. General Procedure (GP) 513 – Use of Corporate Vehicles - This procedure gives guidance on how the company provides corporate vehicles.
- 8.11. General Procedure (GP) 700 – CDL Reimbursement - This procedure gives guidance on how to submit expenses for reimbursement in regard to CDL.

## Learning Pillar

### 1. Training Element

The training element of PPL is a key component of all departments. Training is provided to remain in compliance with regulatory bodies, as well provide employees with the knowledge necessary to perform their job safely. Trainings are provided in various forms depending on the most effective delivery method.

- 1.1. Safety Training (Safety Procedure 46) – This procedure gives guidance on the training and qualification of employees and augmented contractors through the Mandated Safety Training (MST) Program.
- 1.2. Supervisor Safety Training – Training for first- and second-line supervisors to educate them on their roles within the PPL EU safety program and key program elements.



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### 2. Communications Element

PPL safety memos, alerts and other communications are created and delivered to employees in a timely manner through supervisors or Sky. Managers of respective departments are responsible for delivering safety messages to their affected employees that are relevant to their work. Safety related communications are crafted with the intended purpose to keep safety at the forefront of the workers' minds each day.

2.1. Safety Alerts, Memos, and Information Communication (Safety Procedure 53, TDI SPO) This procedure gives guidance on the preparation and distribution of safety alerts, memos, and information documents.

2.2. Meeting Safety Messages – Management employees provide safety messages to workers using safety alerts, memos, information documents, and personal messages.

## Emergency Response Pillar

### 1. Emergency Response Element

Due to the hazardous nature of the work many PPL EU employees are performing, ensuring there are processes in place to respond to an emergency is essential to minimize any impacts. Each process related to Emergency response will be covered within this section later in this document.



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- 1.1. GP 203 – Emergency Response Plan – Each PPL facility has an emergency response plan for various types of emergencies. This General Procedure is owned by Corporate Security.
- 1.2. First Aid/CPR – First aid and CPR are required training courses for any individuals working with any individuals who are working on exposed energized electrical facilities 600V and above. Typically, this is a requirement for lineman and electricians at PPL.
- 1.3. Safety Procedure 47: AED Use – AED are provided throughout PPL facilities. These are inspected and maintained by our PPL facilities work group. Distribution Operations has several work groups who carry AEDs on their trucks. The operators of those trucks are responsible for the inspection and maintenance of those AEDs.
- 1.4. Safety Procedure 36: Emergency Eyewash and Shower – Emergency eyewash station are required when working with caustic materials like battery acid. Transportation mechanics and Substation electricians are some of the affected work groups. There are a few facilities with Emergency Shower stations.
- 1.5. TD&I Public Safety – One of several functions the Public Safety department handles are customer and contractor dig ins to PPL facilities along with responders to other electrical related injuries to the general public. PPL's public facing website contains a safety tab under more information that provides the public with safety information.



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# **Contractor Safety Pillar**

## **1. Contractor Safety Element**

Contractor Safety is an important aspect of the PPL safety program, because PPL actively employs dozens of contractors on an annual basis. PPL strives to hire contractors that are focused on safety as a core value of their company. PPL offers safety support to its contractors through safety observations, training, incident tracking, and other means.

- 1.1. SP-19 Contractor Safety – This procedure outlines how we select our contractors and how we monitor their safety on PPL property.
- 1.2. Contractor onboarding - is developed by PPL and facilitated through ISNetworkworld to track contractor safety training requirements.
- 1.3. Storm Contractor Onboarding- Safety information is communicated to contractors prior to performing work during storm restoration. This information is a transfer of pertinent information that allows the visiting contractors to apply their knowledge and training to work safely during storm restoration.



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# Appendix A: Safety Mindset

## Our Safety Mindset

**OUR PURPOSE:** Provide leadership, guidance, and support to our employees so they can live a safe and healthy work life at PPL. The experience of employees at work will transfer to others, meaning healthier and safer lives for people they touch outside of work – including family and friends.

### OUR BELIEFS:

- We have very good people at PPL who want to do well and be successful.
- People want to work safely.
- We do not want to experience an injury or operational event.
- We do not want our co-workers to experience an injury or operational event.
- As all people do, we might have lapses in judgment or concentration. (This is why Human Performance is so important. We should not assume that the lapses are willful.)
- The families of our employees are counting on us to have a work environment where their loved ones do not get hurt.
- Our employees are so positively reinforced for restoring customers that we need to make sure they don't put themselves in harm's way in doing so.
- If we change a work practice or policy that is intended to improve overall safety for employees, everyone will ultimately get on board as long as:
  - There was involvement of members of the impacted workgroup(s) when developing the change.
  - There is a good explanation of why the change is being made and why it will result in a safer work environment.



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**OUR MINDSET:** Rather than leading safety from a compliance mindset, move to one of being excited to build a work environment of committed individuals focused on improving the safety and well-being of themselves and others. We owe this to our employees and their families.

## **Appendix B: MST Courses**

[MST Courses Hyperlink](#)



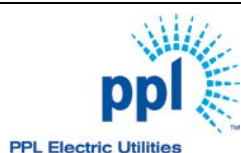
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**REVISION HISTORY**

<b>Rev:</b>	01	<b>Date:</b>	05/07/2021	<b>Effective:</b>	05/07/2021
<b>Prepared by:</b>	Tyler Honor, CSP, PMP, Safety Professional				
<b>Reviewed by:</b>	Safety Operations Team: Brian Kostik, CSP, Jared Dyer, CSP, Dalton Shorts, CSP				
<b>Approved by:</b>	Manager – Safety Operations: Charles Wood				
<b>Revision Comments:</b>	Initial Program Release				





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**SAFETY PROCEDURE**  
**WORK ZONE PROTECTION**

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## **1.0 PURPOSE/SCOPE**

- 1.1. Purpose of this procedure is to define and apply the following principles of work zone traffic control on roadways and highways:
  - 1.1.1 Work duration
  - 1.1.2 Work location
  - 1.1.3 Type of roadway
- 1.2. The scope of this procedure is to ensure temporary traffic control is safely and properly installed. All temporary traffic control work zones shall be installed to meet the requirements of this procedure and the latest edition of Publication 213. It is important to limit the size of the work zone and avoid long stretches with no work activity.

## **2.0 RESPONSIBILITY**

- 2.1. Operations Management
  - 2.1.1 Make all traffic control tools available to employees who are working in or around work zone traffic areas.
  - 2.1.2 Work with Safety Operations, as required, to identify the need and determine the type of traffic-control devices necessary for certain applications.
- 2.2. Safety Operations
  - 2.2.1. Ensure that this procedure meets the requirements of municipal, state and federal regulations where the work is performed.
  - 2.2.2. Provide guidance in identifying the tools required to safely control traffic in a work zone.
  - 2.2.3. Work with managers, as required, to identify the need and determine the type of traffic-control devices necessary for certain applications.
  - 2.2.4. Approve alternate traffic-control devices, as necessary, for situations in which the uses of conventional traffic-control devices are not feasible or it creates a greater hazard.



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2.3. Supervisors

- 2.3.1 Require employees who set up traffic-control devices for a work zone and who perform flagging operations work within the provisions of this procedure.
- 2.3.2 Require that employees who set up traffic controls for a work zone and who perform flagging operations are properly trained.
- 2.3.3 Require that employees complete retraining as necessary. Situations in which retraining is required include, but are not limited to:
  - a. Inadequacies in an employee's knowledge for setting up traffic-control devices for a work zone and/or performing flagging operations indicate that the employee has not retained the requisite understanding or skill.
  - b. Changes made in the regulations (PA Act 229 and Publication 213).
  - c. Changes in the types of traffic-control devices to be used render previous training obsolete.

2.4. Person-in-Charge

- 2.4.1 Successfully complete the required course to attain the necessary skills to serve as a person-in-charge of the work area.
- 2.4.2 Follow the main principles of work zone traffic control:
  - a. Plan the setup for work zone traffic control for the type of roadway where the work is located.
  - b. Maintain a normal traffic flow.
  - c. Communicate to motorists and pedestrians by clearly warning, informing and guiding them in a clear and positive manner as they travel through the work zone.
  - d. Monitor the effectiveness of the traffic control during the life of the work zone and make necessary adjustments.
- 2.4.3 Ensure that the following principles apply when setting up the work zone:
  - a. Place all channelizing devices in place prior to starting work.
  - b. Put up the advance warning signs first.



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- c. Position the flagger(s), if they will be used.
- d. Complete the transition and work zone channelization areas.
- e. Pick them up in reverse order.

**2.5. Flagger**

- 2.5.1 Successfully complete a flagger-training course (within the last three years) which complies with the Department of Transportation's minimum flagger training guidelines.
- 2.5.2 Carry a valid wallet-sized training card containing the name of the flagger, training source, date of successful completion of training, and signature; or have available a roster of trained flaggers that contains the names of flaggers, training source, and date of successful completion of training.
- 2.5.3 Obtain and use the appropriate traffic-control devices.

**3.0 APPLICABILITY**

- 3.1 This procedure is to define and apply the following principles of work zone traffic control on roadways and highways.

**4.0 TERMS AND DEFINITIONS**

- 4.1 **Activity Area** - – Area of a Temporary Traffic Control Zone comprised of the buffer space and the work space usually separated from traffic flow by channelizing devices or barrier located parallel to the travel lanes.
- 4.2 **Buffer Space** - Area that separates traffic flow from the work space. Buffer spaces must remain clear of equipment, vehicles, workers, and materials. The length of longitudinal buffer spaces is defined as distance E on PATA figures and may be increased for downgrades or other conditions that affect stopping sight distance.
- 4.3 **Channelizing devices** – devices that are used to warn, guide, and delineate work areas. Channelizing devices are lightweight, portable, yieldable plastic cones, barricades, tubular markers or drums used to warn, guide and delineate work areas.



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- 4.4 **Emergency work** - [PennDOT Code 212.414 \(Emergency Work\)](#) - Work performed to protect life or property may be initiated without prior compliance with the traffic-control provisions specified by this subchapter, provided the foreman or lead worker implements all available safety measures, and the traffic control is brought into compliance with this subchapter as soon as possible. The foreman or lead worker may use flares as attention-getting and warning devices.
- 4.5 **Lighting devices** – are lights used for work zone traffic control. The two main types of lights used are: 1) warning light, which is a flashing light; and 2) warning beacon, which is a strobe or rotating light.
- 4.6 **Long-Term Stationary Operation** - Work that occupies a location for a period of more than 24 hours.
- 4.7 **Mobile Operation** - An operation where the work zone beginning and ending points move as the work activity moves. Work that moves intermittently or continuously for up to 24 hours.
- 4.8 **PATA** (Pennsylvania Typical Application) - Drawings within this publication that depict temporary traffic control conditions.
- 4.9 **Person-in-Charge** – an employee who sets up traffic controls for a work zone. The person-in-charge determines the complexity of the work zone traffic control based on the type of road and the volume of traffic. The person-in-charge may lead or direct the flagger. The person-in-charge must successfully complete MST500 (Work Zone Traffic Control).
- 4.10 **Roadway** - That portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the sidewalk, berm, or shoulder.
- 4.11 **Rural Highway** - A type of roadway normally characterized by lower volumes, higher speeds, and fewer conflicts with turning vehicles and pedestrians. Rural highways often have speed limits greater than 35 MPH, but are not freeways or expressways.
- 4.12 **Shadow Vehicle (Blocker Vehicle)** - A vehicle positioned in the activity area and located in advance of the work space, all workers, and work vehicles. The primary purpose of the shadow vehicle is to provide advance information to approaching drivers while protecting workers and work vehicles. Any vehicle can be used as a shadow vehicle as long as it is not being used as a work vehicle and is equipped with flashing, oscillating, or revolving yellow lights which are visible from any direction (360° visibility).
- 4.13 **Short-Term Stationary Operation** - An operation that will occupy a location for up to 24 hours. The work zone will have stationary beginning and ending points. Work activity may move freely within these limits.



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- 4.14 **Shoulder** - The part of a highway adjacent to the roadway which has a surface constructed with the same or similar material as the roadway. Shoulder width is measured from the center of the painted edge line to the outside edge of pavement, concrete, or finished surface.
- 4.15 **Sight distance** – the distance along the road visible to the driver. Sight distance is measured along the normal travelled path of a roadway from the driver's location to a height visible above the roadway when the view is unobstructed by traffic. The driver should be able to count to six seconds (count to 10 seconds for trucks) before a car travelling the length of the sight distance arrives at the flagger location.
- 4.16 **Temporary Traffic Control Zone** - An area of a highway where road user conditions are changed because of a work zone or incident by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel.
- 4.17 **Traffic-control devices** – a sign, signal marking or other device placed on or adjacent to a street or highway to regulate, warn or guide traffic. Typical traffic-control devices include, but are not limited to: signs, channelizing devices, lighting devices, flares and arrow panels.

PPL uses cones as the primary traffic-control device. Cones shall be 28" high with two-bands of reflectivity. Cones shall be clearly identifiable with no significant distortion and must be free standing in its normal position. The surface is free of punctures and abrasions. The surface is free of asphalt splatter, cement slurry or other material and will readily respond to washing. The reflective bands have little or no loss of reflectivity, with only minor tears and scratches.



- 4.18 **Urban Area or Urban Highway** - A type of roadway normally characterized by wide ranges of traffic volumes, frequent intersections and driveways, significant pedestrian traffic, speed limits of 35 MPH and below, and most often parking along one or both sides of the roadway.
- 4.19 **Work Location** – there are five work location areas – each work location is defined as follows:
- 4.19.1 Outside the shoulder (work that is 15 feet from the edge of the road on uncurbed roadways or 2 feet from the edge of curbed roadways. This includes all equipment, personnel and work vehicles)
- 4.19.2 On the shoulder – no encroachment (has higher risks than work outside of the shoulder)
- 4.19.3 On the shoulder – minor encroachment (has higher risks than work outside of the shoulder)



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4.19.4 Within the median (has higher risks than work outside of the shoulder)

4.19.5 Within the traveled way (is generally the highest risk and will require the more complex traffic control)

4.20 **Work Zone** - An area of a highway where road user conditions are changed, due to work, by the use of temporary traffic control devices, flaggers, uniformed law enforcement officers, or other authorized personnel. Work zones extend from the first warning device (such as a Road Work (W20-1) sign) to the last warning device (such as an End Road Work (G20-2) sign) or to a point where vehicles return to the original lane alignment.

## 5.0 MAIN BODY

### 5.1 General Requirements

5.1.1 All personnel within the **work zone** are required to wear, at minimum, **Class 2** retro-reflective material. It is highly recommended that **Class 3** (**Class 2** vest + leggings or reflective sleeves) is worn for higher visibility. Hardhats are also required.



5.1.2 Do not perform work over lanes open to live traffic unless expressly authorized by the District Traffic Engineer. Work taking place on maintenance platforms, catwalks, open boom trucks, etc., requires closure of the lane or lanes immediately below.

5.1.3 If work activities involve crossing or working near a railroad, coordinate with the railroad authorities.

5.1.4 When work is suspended for greater than 30 minutes, remove all temporary traffic control devices from the roadway and cover warning signs or turn signs from the view of traffic while remaining in the upright position.





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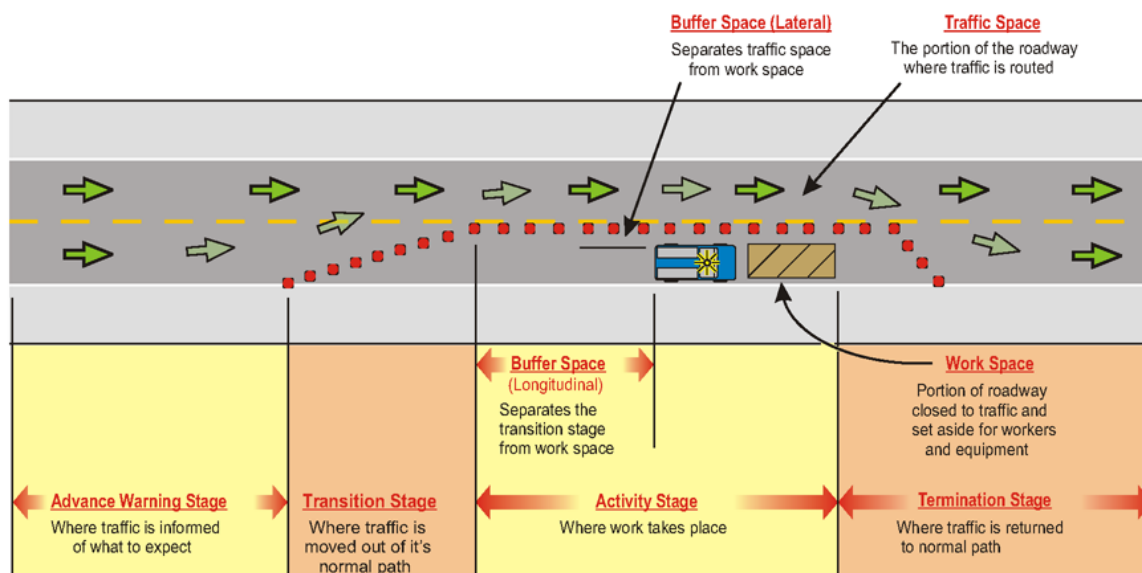
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5.1.5 Shadow vehicles shall not be involved in the operation as a work vehicle nor located within the buffer space

## 5.2 Temporary Traffic Control Zone Stages

a. Most temporary traffic control work zones can be divided into four stages in the order that drivers encounter them. The area or length of each of these stages is determined by the speed and type of roadway. Refer to Publication 213 for further information and diagrams. These stages are shown in Figure 2 and include:

- advance warning stage.
- transition stage.
- activity stage.
- termination stage.



**Figure 2 – Stages of the Temporary Traffic Control Zone**

### 5.2.1 Tapers in Temporary Traffic Control Zone

a. Refer to Attachment B for proper taper length and number of channelizing devices.

### 5.2.2 Removal Procedures

a. Immediately upon completion of work, remove traffic control devices in the reverse in which they were installed.





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5.3 Traffic Control Set-up

5.3.1 There are three steps to the installation of work zone traffic control:

Step #1 - Job Planning

Before the work begins, pre-survey the job and develop a plan for guarding the work zone, take into consideration the type of roadway, site distance, work duration and work location.

Include in the plan:

- Consider the motorist and pedestrian points of view.  
Note: When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with those present in the existing facility.
- Consult your supervisor for interpretation from state or local authorities, if you have questions.
- Note locations of all work area protection devices during installation, to ensure all devices are retrieved upon completion of the work.
- Contact the municipal officials and/or local police department when flagging operations must be conducted at a signalized intersection.

Step #2 - Installation

- Drive through the proposed work zone.
- Park work vehicles in a safe area. Set up traffic-control devices in the direction of traffic travel.
  - Advance warning signs starting with the initial sign the motorist will see.
  - Set up channelizing devices for the taper and buffer space. Channelizing devices must be identical to each other. For example: cones must be the same size and appearance.
  - Taper, then buffer, by walking each channelize into position in the lane while watching traffic upstream.
  - All channelizing devices should be kept on the work zone side of the double yellow line.
- Pull work vehicle into work zone (keep vehicles out of the buffer and transition zones).

5.4 Use of Non-Routine Signs

5.4.1 The installation of the Work Zone-Turn on Headlights (R22-1), Active Work Zone When Flashing (W21-19), and End Active Work Zone (W21-20) signs, and the flashing white lights are not required for any of the following situations:

- a. Operations 1-hour or less in duration.



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- b. Stationary work where the daily duration of the construction, maintenance, or utility operation is less than 12 hours and all traffic control devices are removed from the highway at the completion of the daily operation.
  - c. The normal speed limit is 45 MPH or less.
  - d. The work is in response to emergency work or conditions such as a major storm.
- 5.4.2 When non-routine signs are needed, refer to Publication 213 (PATA 003) for installation guidelines.
- 5.4.3 Speed display signs are only used on Interstate highway work zones with a project cost exceeding \$300,000, use a speed display sign (SDS) on each approach to the work zone to advise motorists of their vehicles' speed.
- 5.4.4 When traffic control signs are placed in a temporary traffic control area, all permanent signs that provide a conflicting message shall be covered or removed.
- 5.5 Flagger Stations
- a. Flagger Stations shall be located far enough in advance of the work space so that motorists can see the flagger far enough in advance.
  - b. Appropriate work area signs shall be placed prior to the flagger's station (except in emergency situations). Flaggers should be visible to approaching motorists from a distance shown on the table to the right.
 

IF THE SPEED LIMIT IS:	BE VISIBLE TO MOTORISTS AT:
25 mph	155 feet
30 mph	200 feet
35 mph	250 feet
40 mph	305 feet
45 mph	360 feet
50 mph	425 feet
55 mph	495 feet
  - c. For non-emergency nighttime work, flagger stations must be illuminated by an overhead source. (Use PPL-Approved lighting units - CID # 1019763). The lighting used shall not create a disabling glare for approaching road users or the flagger.
  - d. When a Flagger Ahead (W20-7) sign is displayed, a flagger must be present. Cover or remove this sign immediately upon conclusion of flagging duties.
  - e. Two flaggers, when used, are required to communicate with each other. The preferred way to communicate is using radios, and if at all possible the flaggers should be in line of sight of each other.



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- f. Flagger stations shall provide positive guidance to drivers who are alternately traveling through a work zone.
- g. A red flag may also be used in emergency situations when a stop/slow paddle is not available.

**5.6 Flagger Signaling Devices**

- a. Use of an approved STOP/SLOW paddle is the primary hand-signaling device because it gives road users more positive guidance. A STOP/SLOW paddle shall be used to control one-lane, two-way traffic.
- b. The stop/slow paddle shall be held under control of the flagger at all times. Do not support the paddle by inserting the shaft into a cone, cart, or other device which would allow the paddle to be freestanding.
- c. During hours of darkness illumination of flagger stations is required (except during emergencies). When a flagger station is not illuminated during hours of darkness, a flashlight with a red wand or one or more flares shall be used to supplement the reflectorized Stop/Slow Paddle.
- d. Approved red flags (24" x 24"), when used, shall be made of a good grade of red material and securely fastened to a staff about 36 inches long. When used at nighttime, flags shall be retro-reflectorized red. The use of a flag is limited to emergency situations only.

**5.7 Flagger Requirements**

**5.7.1 Flagger conducts when performing traffic control duties:**

- a. Face traffic.
- b. Stand either on the shoulder adjacent to the road being controlled or in the closed lane prior to stopping road users.
- c. Be clearly visible to the first approaching road user, as well as other road users, at all times.
- d. Be stationed sufficiently in advance of the workers to warn them of approaching danger by out of control vehicles.
- e. Stand alone, never permitting a group of workers to congregate around the flagger station.



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- f. Never leave the flagger station unless relieved of duty.
- g. Using cell phones for personal conversations, texting, etc., is prohibited while performing flagging duties.
- h. Never participate in work not directly related to traffic control.
- i. As traffic warrants, additional flaggers shall be used to control traffic movements with the use of a red flag from side roads, driveways, etc. that intersect the work zone between the flagger locations.
- a. Wear approved rain gear, as needed.
- b. Wear, in addition to the high visibility apparel, the following personal protective equipment:
  - Hard hat and eye protection
  - Hand protection and Safety Shoes

## **6.0 REFERENCES**

- 6.1 Refer to Section 7.0 (Regulatory Requirements)

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 Publication 213 [\(latest edition posted by PA-DOT\)](#)
- 7.2 MUTCD [\(Manual on Uniform Traffic Control Devices\)](#)
- 7.3 Publication 234 [Flagging Handbook](#)
- 7.4 Pennsylvania Code - [PA Code Website](#)

## **8.0 TRAINING / SAFETY**

- 8.1 Ensure that MST500 [Work Zone Traffic Control](#) and MST504 [Work Zone Flagging Safety Refresher CBT](#) comply with municipal, state and federal regulations.
- 8.2 Assigned employees must take refresher training every three years.
- 8.3 Make available to all trainees a wallet-size card containing the name of the flagger, training source, date of successful completion of training, and signature.



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## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS

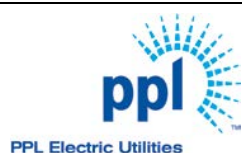
- 10.1 Attachment A - Map of Regional Traffic Management Centers
- 10.2 Attachment B - all PATA Images (copied from the PA Publication 213 dated 3/10/2014).
- 10.3 Link - Publication 213 Temporary Traffic Control Guidelines  
[\(latest edition posted by PA-DOT\)](#)
- 10.4 Link - Publication 234 [Flagging Handbook](#)
- 10.5 Link Publication 212 [Official Traffic Control Devices](#)
- 10.6 Link - Publication 208 [PA Work Zone Pocket Guide for Municipalities & Utilities](#)

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	02	Date	06/19/2017	Effective	6/19/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with local, state, and federal regulations. Repaired broken links to regulations within the procedure. No other major changes from the 2014 update.			



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<b>Rev</b>	01	<b>Date</b>	01/17/2014	<b>Effective</b>	3/17/2014
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Jeff Monsell, Jacque Creamer, John Wirth, Richard Horan, Brian Kostik, Jared Dyer.			
<b>Approved by:</b>		Brian Zickefoose, Manager-Safety Operations			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure Converted from General Safety Procedure to Electric Utilities Safety Procedure Revised to comply with revised Publication 213 "Temporary Traffic Control Guidelines" (March 2014)			

<b>Rev</b>	00	<b>Date</b>	07/20/2012	<b>Effective</b>	07/20/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, and Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

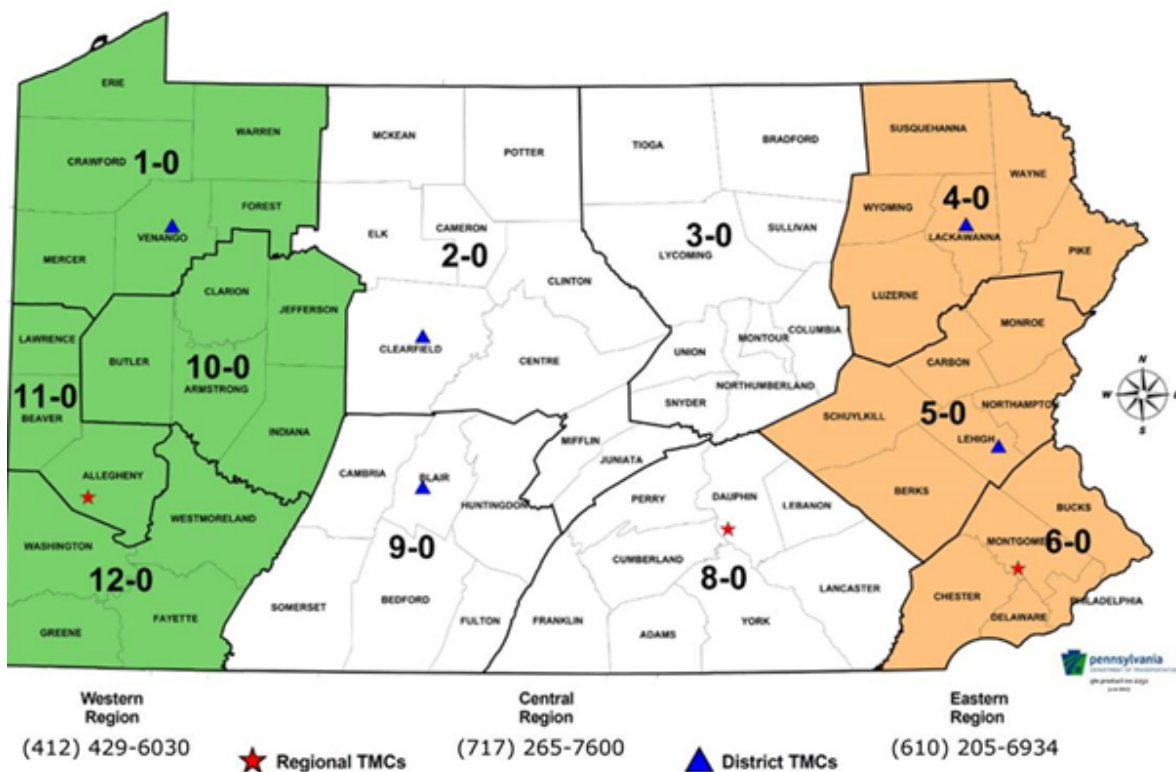


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**Attachment A**

**Map of Regional Traffic Management Centers**







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Attachment B – Chart to be used with all of the following PATA illustrations:

**Sign Spacing Chart**

Condition	Distance			
	A	B	C	F
Feet	Feet	Feet	Feet	Feet
Urban 35 MPH or less	100	100	100	100
Urban Greater than 35 MPH	350	350	350	350
Rural	500	500	500	500

When multiple distance plaques are used on advance warning signs, they shall all be of the same series type.  
Example: either all "AHEAD" or XXX FEET.

**Taper Length Formulas**

S	L
40 MPH or less	$L = \frac{WS^2}{60}$
45 MPH or more	$L = WS$

S = Regulatory Speed Limit  
W = Width of Offset  
L = Length

**Distance and Spacing Quick Reference Chart**

Speed	W	L	1/2L	1/3L	Min. Channelizing Devices Per Taper Type (Length)				D	E	H
					L	1/2L	1/3L	50'			
MPH	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
25	10	105	55	35	6	6	6	6	50	155	150
	11	115	60	40							
	12	125	65	45							
30	10	150	75	50	6	6	6	6	60	200	150
	11	165	85	55							
	12	180	90	60							
35	10	205	105	70	6	6	6	6	70	250	150
	11	225	115	75							
	12	245	125	85							
40	10	270	135	90	6	6	6	6	80	305	150
	11	295	150	100							
	12	320	160	110							
45	10	450	225	150	6	6	6	6	90	360	150
	11	495	250	165							
	12	540	270	180							
50	10	500	250	170	6	6	6	6	100	425	250
	11	550	275	185							
	12	600	300	200							
55	10	550	275	185	6	6	6	6	110	495	250
	11	605	305	205							
	12	660	330	220							

Note: Channelizing devices used in taper shall be equally spaced at ½ D Max.

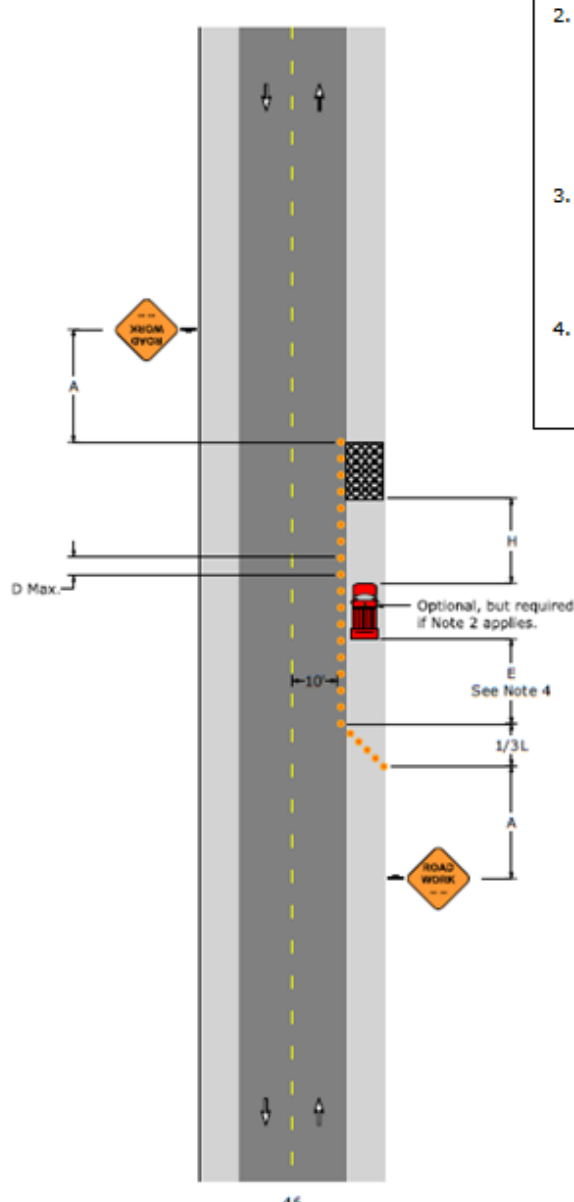




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## **Attachment B - PATA 102 (Workspace on or beyond the shoulder- Minor roadway encroachment)**



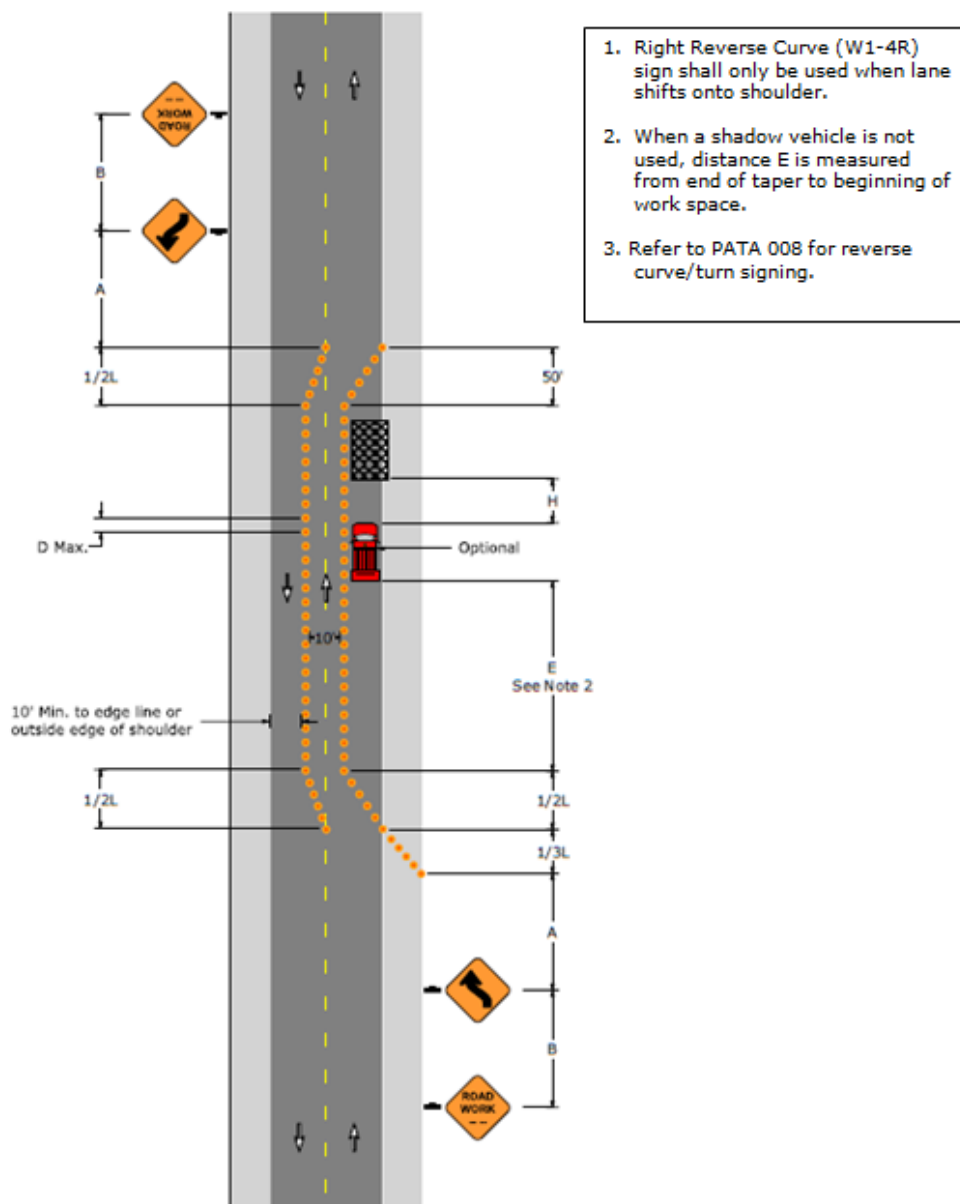
1. If the work space is completely within a parking lane and parking is present, the taper or shadow vehicle is not required.
2. For operations of 15 minutes or less:
  - The Road Work (W20-1) sign is not required.
  - All channelizing devices may be eliminated if a shadow vehicle is present.
3. For divided highways and one-way highways where it is physically possible, advance warning signs should also be placed on the left-hand side of the roadway.
4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.



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## **Attachment B - PATA 103 (Work space has a major encroachment on the roadway)**

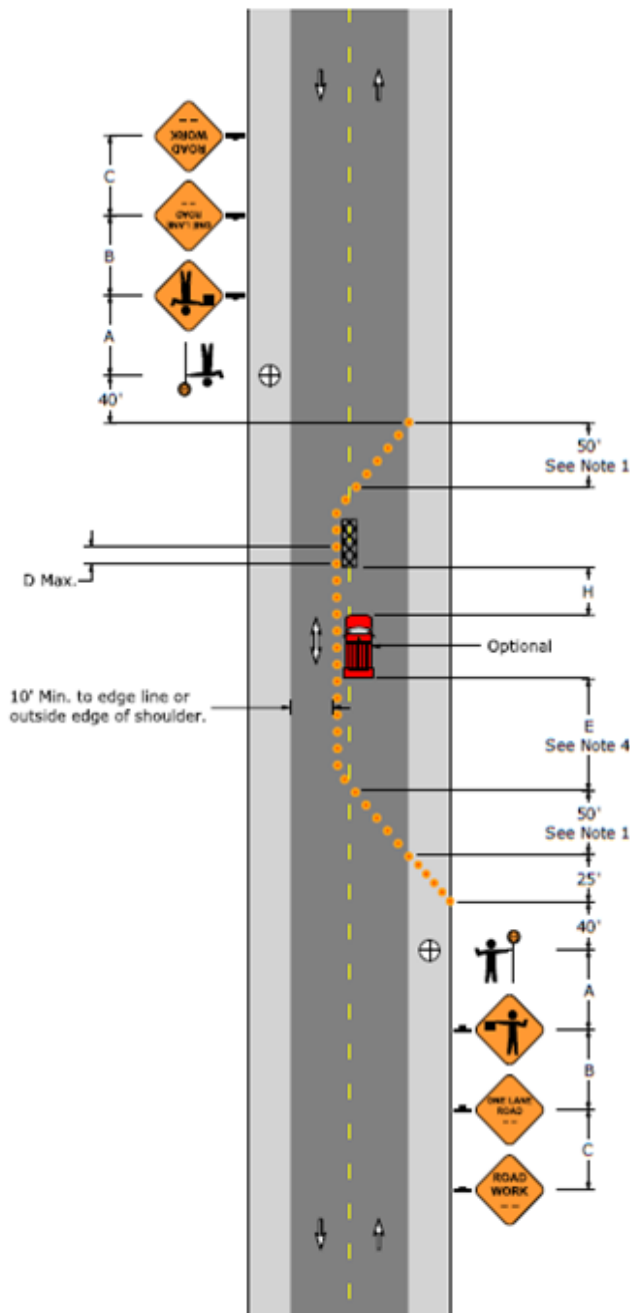




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## **Attachment B - PATA 9c (Work Along Roadway Centerline)**



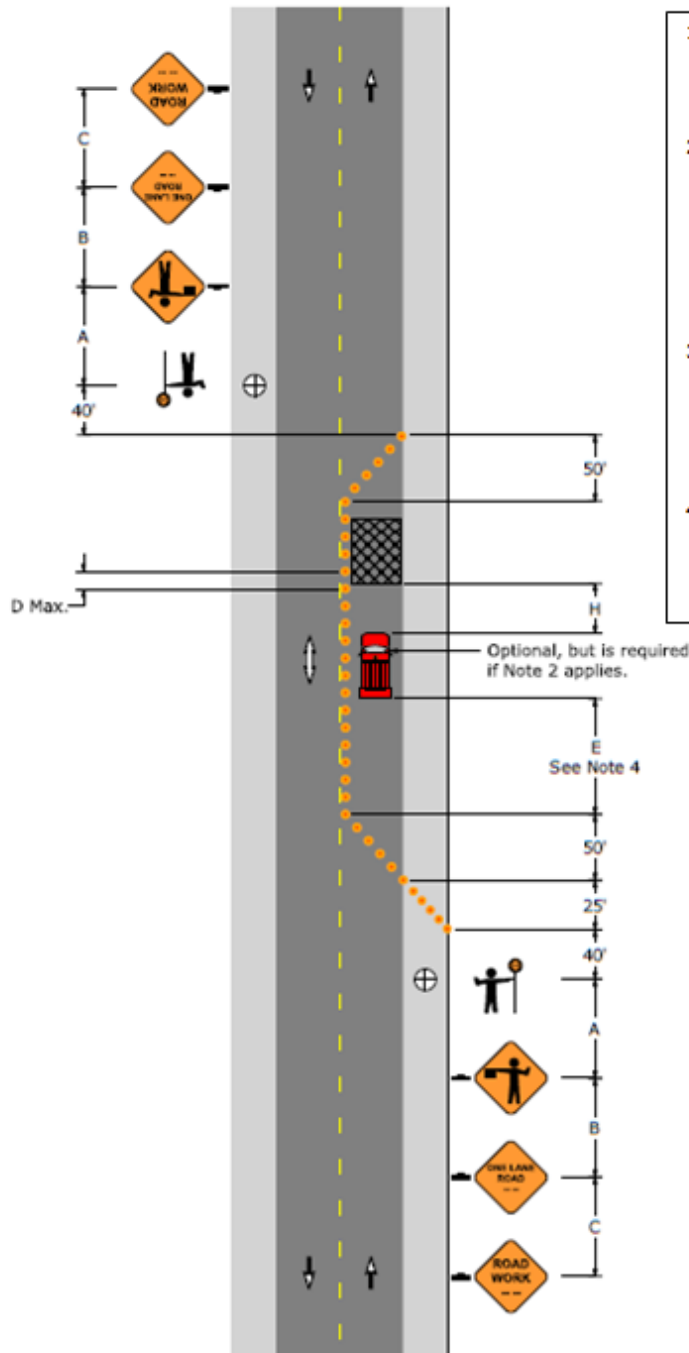
1. Place 50' taper in closed lane as shown. Continue taper angle and spacing as needed on the opposite side of the roadway centerline while maintaining a 10' minimum lane width for traffic.
2. Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.
3. The buffer space shall be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.
4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.



# **SP 01-001** **SAFETY PROCEDURE** **WORK ZONE PROTECTION**

0000-000-PR-8000  
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## Attachment B - PATA 107 (Work In One Lane; Two Flaggers)



1. Each flagger shall be clearly visible to traffic for a minimum distance of E and shall be in constant communication with all other flaggers.
2. For operations of 15 minutes or less:
  - a. The Road Work (W20-1), One Lane Road (W20-4), and Flagger Symbol (W20-7) signs are not required.
  - b. All channelizing devices may be eliminated if a shadow vehicle is present.
3. The buffer space shall be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.
4. When a shadow vehicle is not used, distance E is measured from end of taper to beginning of work space.



**SP 01-002**  
**SAFETY PROCEDURE**  
**FLAGGER STATION ILLUMINATION**

0000-000-PR-8015  
Custom ID: SP 01-002  
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## **1.0 PURPOSE/SCOPE**

- 1.1 This procedure provides the requirements for flagger station illumination during operations at night or reduced visibility.
- 1.2 The objective of lighting the flagger station is to make the flagger stand out from the surroundings.

## **2.0 RESPONSIBILITY**

- 2.1 Safety Operations with the assistance of Work Methods Department shall maintain this procedure.
- 2.2 PPL Electric Utilities Management shall require employees to follow this procedure.

## **3.0 APPLICABILITY**

- 3.1 The procedure applies to all employees that are assigned to perform flagging duties at night or during reduced visibility conditions.

## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Candlepower** - The measure of illumination in a particular direction, while lumens are most useful as a measure of total illumination. The conversion above is saying that a light source shining with 1 candlepower in all directions would produce 12.57 lumens.
- 4.2 **Emergency work** - [PennDOT Code 212.414 \(Emergency Work\)](#) - Work performed to protect life or property may be initiated without prior compliance with the traffic-control provisions specified by this subchapter, provided the foreman or lead worker implements all available safety measures, and the traffic control is brought into compliance with this subchapter as soon as possible. The foreman or lead worker may use flares as attention-getting and warning devices.
- 4.3 **Federal Highway Administration** – [Click this link for information regarding the Federal Highway Administration](#)
- 4.4 **Lumens** - The unit of total light output from a light source. It is based on the illumination of a 1 square foot area one foot away from one candle. Divide the number of lumens you have produced, or are capable of producing, by 12.57 and you get the candlepower equivalent of that light source.



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- 4.5 **National Cooperative Highway Research Program** - A forum for coordinated and collaborative research, that addresses issues integral to the state Departments of Transportation (DOTs) and transportation professionals at all levels of government and the private sector. The NCHRP provides practical, ready-to-implement solutions to pressing problems facing the industry.

## **5.0 MAIN BODY**

- 5.1 Considering the safety issues inherent to night work, consideration should be given to enhancing traffic controls to provide added visibility, driver guidance, and increased protection for workers.
- 5.2 Provide additional lights and retro reflective markings to workers, work vehicles, and equipment. The objective of lighting flagger stations is to make the flagger stand out from the surroundings.
- 5.3 All flagger stations shall be illuminated unless it is an emergency situation. An emergency repair is defined by Pennsylvania as repair to a utility facility undertaken to repair damage resulting from a vehicle accident or collision with the facility, a failed component or storm damage. In an emergency situation, a flashlight with a red wand or one or more flares shall be used to supplement the reflectorized Stop/Slow Paddle. Scheduled work is **NOT** considered an Emergency.
- 5.3.1 Traffic control and flagger station illumination shall be brought into compliance as soon as possible after 15 minutes passes.
- a. For work that can be completed in 15 minutes or less, all channelizing devices and the "Road Work (W20-1), the "One Lane Road" (W20-4) signs, and the flagger station illumination may be eliminated if a vehicle with an activated yellow warning beacon is present **in advance** of the work space. The employee is responsible to use good judgment in determining if the work (including truck set-up and breakdown) will be done in 15 minutes.
- 5.4 Horizontal luminance of 5 foot candles (50 lux) is adequate for flagger station illumination.
- 5.5 Floodlighting shall not produce a disabling glare condition for approaching road users.
- 5.5.1 Position the lighting equipment to provide sufficient illumination for the flagger.



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- 5.5.2 The adequacy of the floodlight placement and elimination of potential glare should be determined by driving through and observing the floodlighted area from each direction on all approaching roadways after the initial floodlight setup is complete.
- 5.6 Mini-Cube™ Dual LED Light, 1600 Lumens/20 Watts-Flagger Light
  - 5.6.1 Designed to Meet National and State Flagger Illumination Regulations
  - 5.6.2 Flagger Light is Lightweight, Highly Portable with Long Duration Runtime
  - 5.6.3 Complies with NCHRP Report 476 Section 2.5.2 (Illumination, Visibility, and Temporary Lighting) and the MUTCD Section 6E.05
  - 5.6.4 PPL Catalog # 1019763 - LIGHT, SAFETY, FLAGGER LIGHT, 12V DC INTERNAL BATTERY, PLASTIC, DUAL LED 1600 LUMENS, 8 FT. EXTENSION



- 5.7 Recommended flaggers position:
  - 5.7.1 Stand on the shoulder or closed lane adjacent to the open lane as the traffic approaches, moving into the open lane only after traffic has stopped and only if necessary to be seen by other traffic.





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- 5.7.2 Especially at night, it is critically important that a flagger is not positioned in the path of an approaching vehicle or between two traffic streams, so that the flagger has the best possible chance to avoid the vehicle.
- 5.7.3 Under no circumstances should a flagger be positioned where the escape path is blocked by parked vehicles, equipment, or other features.
- 5.7.4 Position should provide advanced sight distance.
- 5.7.5 Isolate the flagger from the work operation, other workers and equipment to:
  - a. Help drivers to easily detect the flagger as they approach.
  - b. Provide the flaggers clear path to see approaching traffic and to avoid any vehicles that fail to stop or swerve toward the flagger.
  - c. Flagger MUST be wearing all proper personal protective equipment as required by PPL Electric Utilities and governing agencies.

## **6.0 REFERENCES**

- 6.1 PPL EU Safety Rule Book
- 6.2 National Cooperative Highway Research Program - [NCHRP](#)

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 Publication 213 [\(latest edition posted by PA-DOT\)](#)
- 7.2 MUTCD [\(Manual on Uniform Traffic Control Devices\)](#)
- 7.3 Publication 234 [Flagging Handbook](#)
- 7.4 Pennsylvania Code [PA Code Website](#)
- 7.5 PDOT Pub 212 Official Traffic Control Devices

## **8.0 TRAINING AND SAFETY**

- 8.1 All employees who perform flagging work must complete MST500 [Work Zone Traffic Control](#) and MST504 [Work Zone Flagging Safety Refresher CBT](#) and comply with municipal, state and federal regulations.



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## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS

- 10.1 Link - [Manual on Uniform Traffic Control Devices \(MUTCD\) - FHWA](#)
- 10.2 Link – Work Area Protection [PUB 213](#)
- 10.3 Link - Official Traffic Control Devices [PUB 212](#)
- 10.4 Link – NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM  
[NCHRP Report 476 - Transportation Research Board](#)

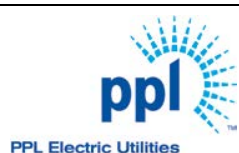
## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	06/19/2017	Effective	6/19/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with local, state, and federal regulations. Repaired broken links to regulations within the procedure. No major changes from the 2013 update.			

Rev	00	Date	07/31/2012	Effective	03/18/2013
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



**SP 01-003**  
**SAFETY PROCEDURE**  
**OFF-ROADWAY WORK AREA PROTECTION**

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<b>9.0 COMPLIANCE AND EXCEPTIONS – N/A .....</b>	<b>6</b>
<b>10.0 ATTACHMENTS – N/A .....</b>	<b>6</b>
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## **1.0 PURPOSE/SCOPE**

- 1.1 This procedure defines the guidelines for applying work area protection in off-roadway work areas.

## **2.0 RESPONSIBILITY**

### **2.1 Management**

- 2.1.1 Work with Safety Operations, as required, to identify the need and determine the type of work area protection devices necessary for off-roadway work performed.
- 2.1.2 Ensure that employees, who work in or around work zone traffic control areas, understand the importance of following rules and regulations inside a protected work area.

### **2.2 Safety Operations**

- 2.2.1 Work with the management, as required, to identify the need and determine the type of work area protection devices necessary for certain applications.

## **3.0 APPLICABILITY**

- 3.1 This procedure defines the guidelines for applying work area protection in off-roadway work areas.

## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Barricade** – a physical obstruction such as ropes, tapes, screens, nets, signs or cones intended to warn and limit access to hazardous areas.
- 4.2 **Barriers** – a device approved by the department responsible and Safety Operations which physically prevents a worker, tool or equipment from reaching beyond this device.
- 4.3 **Class 2** – safety apparel that meets the ANSI 107-21004 standard for high visibility. The retro-reflective material shall be orange, yellow, white, silver and yellow-green or a fluorescent version of these colors, and shall be visible at a minimum distance of 1000 feet.
- 4.4 **Colored tape** – the color red identifies “danger” or “stop”. The color yellow represents “caution”.



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- 4.5 **Excavation** – any man-made cut cavity, trench or depression in an earth surface formed by earth removal.
- 4.6 **Off-roadway areas** – include test areas; public work areas; excavated areas, areas where there are hazards in the walking/working surfaces, pole holes and areas where overhead hazards exist. Examples of off-roadway areas may be inside a power plant or transmission/distribution work performed in the middle of a field.
- 4.7 **Person-in-Charge** – an employee who sets up all work area protection around the work zone. This person may be the job leader or foreman and may lead or direct other people inside the work area.
- 4.8 **Test Areas** – areas in which high voltage electrical tests are being conducted.
- 4.9 **Vault** – an enclosure or manhole above or below ground, which personnel may enter and which is used for the purpose of installing, operating, and/or maintaining equipment, and/or cable, which need not be of submersible design.
- 4.10 **Wall Opening** – an opening at least 30 inches high and 18 inches wide through which persons may fall.
- 4.11 **Work Area Protection**– The area in which work is performed off the roadway and the occupied area is protected by ropes, signs and barriers to ensure protection against falling overhead objects, floor openings, equipment and traffic. Off-roadway areas may be protected by using watch persons, warning signs, barriers, barricades or similar equipment.

Examples of areas in which work area protection may be applied in off-roadway areas are:

- 4.11.1 Work areas around machines or equipment with rotating booms or superstructures such as cranes or man lifts.
- 4.11.2 Work areas where grinding and welding operations are in progress.
- 4.11.3 Work areas such as aisles or walkways where someone is working overhead.
- 4.11.4 Floor areas where there may be a danger of slipping or tripping unless the hazard can be eliminated.
- 4.11.5 In energized substations where a portion of the sub has been taken out of service.
- 4.11.6 Work areas located underground where switching or other operations may create a hazard for other employees or the general public.
- 4.11.7 Around open trenches, vaults, foundations or excavations.
- 4.11.8 Work areas where wall openings or holes exist due to job requirements.
- 4.11.9 Work areas where respirable hazards exist.



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## **5.0 MAIN BODY**

### **5.1 Employees**

#### **5.1.1 When working in or around the work site:**

- a. Participate in a tailboard conference.
- b. Understand why work area protection is important.
- c. Work with person-in-charge to ensure the work area is protected when the job being performed presents a hazard to anyone not associated with the work performed (e.g., general public and visitors)
- d. Wear all personal protective equipment, including reflective Class 2 retro-reflective apparel, as required.

#### **5.1.2 Employees not associated with the protected area job:**

- a. Honor all barriers and work area protection erected in the work area.
- b. Stay clear or obtain permission to enter the work zone from the person-in-charge.
- c. Wear, when required, reflective Class 2 retro-reflective apparel.

### **5.2 Person-in-Charge**

Conduct a tailboard conference at the jobsite with all affected employees. Document the tailboard on the tailboard sheet, and submit copy to supervisor in charge of the work.

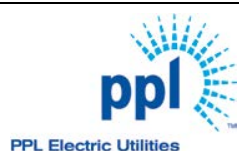
- 5.2.1 Determine the work area protection required for an off-roadway area work site.
- 5.2.2 Determine if the work site needs to be placed within a barrier or attended, depending on the exposure and the type of work area to be protected.
- 5.2.3 When temporary electrical facility bypasses are installed, provisions must be made to keep both unqualified employees and the public from inadvertently disturbing or contacting the facilities. Temporary bypasses shall be barricaded / flagged with warning material.
- 5.2.4 Before work is begun in the vicinity of vehicular or pedestrian traffic that may endanger employees, warning signs or flags and other traffic control devices shall be placed in conspicuous locations to alert and channel approaching traffic.



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- 5.2.5 Ensure protection from overhead hazards by installing ropes, signs; ropes with pendants, a safety fence or rigid barriers around the work area. When not needed, the barriers shall be removed.
- 5.2.6 Manhole barriers shall protect floor openings, street openings, manholes and vaults, or they must be attended. Covering the hole shall be required when unattended for long periods such as overnight, or the end of a work shift. Every floor hole into which persons can accidentally walk must be guarded by either:
  - 5.2.6.1 a standard railing with standard toeboard on all exposed sides, or
  - 5.2.6.2 a floor hole covers of standard strength and construction. (While the cover is not in place, the floor hole must be constantly attended by someone or must be protected by a removable standard railing.)
  - 5.2.6.3 a cover that leaves no openings more than 1-inch wide must protect every floor hole into which persons cannot accidentally walk (on account of fixed machinery, equipment or walls). The cover must be securely held in place to prevent tools or materials from falling through.
- 5.2.7 Guard all test areas where high voltage testing is conducted by one of the following means:
  - a. Distinctively colored tape that is supported at least waist high with safety signs attached.
  - b. Barriers or barricades that limit access into the test area.
  - c. Use of attendant(s).
- 5.2.8 Barricade areas 4-feet or more in depth with guardrail systems, fences, barricades and/or covers. If the work area is open to the public, signs shall be posted noting Caution or Danger-Open Trench. The area must have flashing amber lights if left unattended during hours of poor visibility.
- 5.2.9 Guard or barricade all machinery having rotating superstructures (cranes or manlifts) or where the possibility of crushing exists.
- 5.2.10 Cap all protruding or reinforcing steel on which workers can fall 4 feet or more.
- 5.2.11 Monitor the work area protection to ensure the safety of pedestrians and non-work personnel in the surrounding area.
- 5.2.12 Remove the work area protection when the job is finished.



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## **6.0 REFERENCES**

- 6.1 PPL Electric Utility Safety Rules

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 29 CFR OSHA Subpart R, 1910.269 [Electric Power Generation, Transmission, and Distribution](#)
- 7.2 29 CFR OSHA Subpart D, 1910.22 [Walking-Working Surfaces](#)

## **8.0 TRAINING / SAFETY**

- 8.1 Ensure all employees entering or working in an area assess the workplace hazards, select PPE that will protect workers from these hazards, and ensure that workers use the PPE selected. Equipment must be properly fitted to the worker. Train workers in the use, operation, and limitations of equipment, as well as how to put on and remove the equipment properly (i.e., donning techniques).

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS – N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).





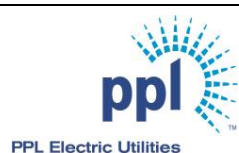
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## 12.0 RECORD OF REVISIONS

Rev	01	Date	06/20/2017	Effective	6/20/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with local, state, and federal regulations. Repaired broken links to regulations within the procedure. No other major changes from the 2012 update.			

Rev	00	Date	08/02/2012	Effective	08/02/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

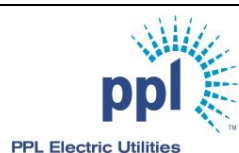


**SP 02**  
**SAFETY PROCEDURE**  
**FALL PROTECTION**

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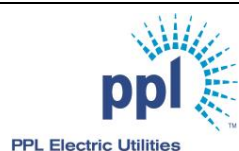
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### 1. PURPOSE/SCOPE

- 1.1. Establish the minimum safety requirements to be followed by all employees when there is a risk of falling 4 feet or more, including when work is being performed 4 feet or more above the ground on poles, towers, or similar structures.
- 1.2. Define the conditions under which fall protection is needed.
- 1.3. Define requirements for the types of fall protection systems at PPL Electric Utilities.
- 1.4. Specify components of a fall protection plan and a rescue plan needed prior to start of work, including necessary actions to prevent or alleviate **suspension trauma**.
- 1.5. Define the roles and responsibilities of employees, supervisors, and safety to ensure that the fall protection and procedures are followed.

### 2. RESPONSIBILITY

- 2.1. Competent Person Responsibilities
  - 2.1.1. Successfully complete the required courses to attain the necessary skills to serve as a **competent person**.
  - 2.1.2. Obtain and use the appropriate **approved fall protection systems** when working **aloft**, as defined in this procedure.
  - 2.1.3. Inspect and maintain all equipment and components associated with **approved fall protection systems**.
  - 2.1.4. Ensure that weight limits on **approved fall protection systems** are not exceeded.
  - 2.1.5. As part of the Tailboard meeting, discuss a jobsite **fall rescue plan**; and communicate an understanding of the plan with the work crew, including:
    - a) Jobsite hazards
    - b) Methods of rescue and rescue equipment
    - c) Rescue route
    - d) Rescue team/emergency services
    - e) Communication devices to be used (e.g., radio, cell phone, plant page)
- 2.2. Supervisor Responsibilities



## SP 02 SAFETY PROCEDURE FALL PROTECTION

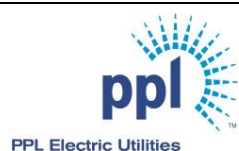
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- 2.2.1. Require employees who work **aloft** to work within the provisions of this procedure.
- 2.2.2. Require that employees who work **aloft** are properly trained to serve as a **competent person**.
- 2.2.3. Require that employees complete retraining as necessary. Situations in which retraining is required include, but are not limited to the situations:
  - a) Inadequacies in an affected employee's knowledge or use of **approved fall protection systems** or equipment indicate that the employee has not retained the requisite understanding or skill.
  - b) Changes in the workplace render previous training obsolete.
  - c) Changes in the types of **approved fall protection systems** or equipment to be used render previous training obsolete.
- 2.2.4. The supervisor shall provide for the prompt rescue of employees in the event of a fall or shall insure the employees are able to rescue themselves.
- 2.3. Environmental Health & Safety Responsibilities
  - 2.3.1. Assure availability of approved training in proper use of **approved fall protection systems**, in accordance with this procedure and applicable safety rules.
  - 2.3.2. Audit/monitor, during scheduled safety audits, user departments for compliance with this Fall Protection Procedure.
  - 2.3.3. Provide guidance in the selection and use of **approved fall protection systems**.
  - 2.3.4. Approve alternate task-specific work procedures as necessary for situations in which the use of conventional fall protection equipment is not feasible and it creates a greater hazard.

### 3. APPLICABILITY

- 3.1. This procedure shall be followed by all Electric Utilities employees.

### 4. TERMS AND DEFINITIONS



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- 4.1. **Aloft** – 4 feet or more above ground, the floor or working surface, or work being performed 4 feet or more above the ground on poles, towers, or similar structures.
- 4.2. **Anchorage (or Anchor Point)** – A secure point of attachment for a **personal fall arrest system**. It must be independent from the means supporting or suspending a worker.
- 4.3. **Approved Fall Protection System (AFPS)** – Includes guardrail system, **travel restraint system**, **personal fall arrest system**, and/or **positioning device**.
- 4.4. **Barricade** – A physical obstruction, such as ropes, wires, fences, or chains, supported by stanchions, cones, or A-frames; intended to warn employees about a hazardous area and to limit access to the area.
- 4.5. **Body Belt** – A body support designed to be secured around the employee's waist to distribute the forces developed while using a **travel restraint system** or a **positioning device system**.
- 4.6. **Body Harness** – A body support designed to be secured around the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist and torso.
- 4.7. **Carabiner** – A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object.
- 4.8. **Competent Person** – One who is capable by experience, education, or training of identifying existing and predictable hazards related to working **aloft**, and who has authorization to take prompt corrective measures to eliminate the hazards.

An employee who has successfully completed the following MST courses has attained the necessary skills to serve as a **competent person**.

MST744 (Fall Protection and Scaffold User) and  
MST745 (JPM – Donning a Full Body Harness)

- 4.9. **Deceleration Device** – Any mechanism, such as a rope grab, rip stitch **lanyard**, specially woven **lanyard**, tearing or deforming **lanyards**, **self-retracting lifelines/lanyards**, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
- 4.10. **Deceleration Distance** – The additional vertical distance from when a **deceleration device** activates to the final resting point of the employee.
- 4.11. **Equivalent** – Equal in value or function. It refers to alternative designs, materials, or methods to protect against a hazard, which the employer can

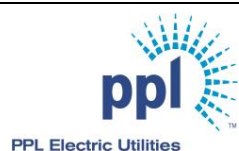


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demonstrate will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in the standard.

- 4.12. **Fall Rescue Plan** – A contingency plan developed to ensure prompt rescue of an employee following a fall. A rescue plan shall contain at least: minimum response time of rescuers, availability of resources to meet the response time, contact numbers for available resources and equipment needed to perform a rescue. The rescue plan must be reviewed prior to employees going **aloft**.
- 4.13. **Freefall** – The act of falling before a **personal fall arrest systems** begins to apply force to arrest the fall.
- 4.14. **Freefall Distance** – The vertical displacement of the fall arrest attachment point on the employee's **body harness** between onset of the fall and just before the system begins to apply force to arrest the fall.
- 4.15. **Guardrail System** – A barrier erected to prevent employees from falling to lower levels when they are walking or working in an area with an **unprotected side or edge** that is 4 feet or more above the **lower level**.
- 4.16. **Hoist Area**– The area around and below an area where materials or objects are being raised or lifted.
- 4.17. **Hole** – A gap or void 2 inches or more in its least dimension, in a floor, roof or other walking/working surface.
- 4.18. **Lanyard** – A component of a **personal fall arrest system**. A **lanyard** can be a flexible line, wire rope, or strap that generally has a connector at each end for connecting the **body belt** or **body harness** to a **deceleration device, lifeline, or anchorage**.
- 4.19. **Lifeline** – A component consisting of a flexible line for connection to an **anchorage** at one end to hang vertically (vertical **lifeline**), or for connection to **anchorage** at both ends to stretch horizontally (horizontal **lifeline**), and which serves as a means for connecting other components of a **personal fall arrest system** to the **anchorage**.
- 4.20. **Manlift** – Elevating and rotating equipment that may be supported on a boom mounted on a truck or mobile unit, for the transportation of personnel from level to level. **Manlifts** have articulating structural members that allow vertical and horizontal movement of the platform without movement of the mobile unit.
- 4.21. **Opening** – A gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.
- 4.22. **Orthostatic Intolerance (OI)** – The development of adverse symptoms while standing, or while otherwise in an upright position, caused by the accumulation of blood in the veins (of the legs) due to gravity and lack of muscular pumping.

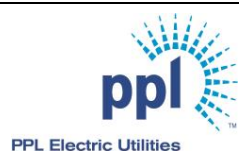


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- 4.23. **Personal Fall Arrest System (PFAS)** – A system used to arrest an employee in a fall from **aloft**. A PFAS must always include a full **body harness** and connecting means between the **body harness** and an **anchorage** or **anchorage** connector. Such connecting means may consist of an energy absorbing **lanyard**, fall arrester, **lifeline**, **self-retracting lanyard/lifeline**, or suitable combination of these.
- 4.24. **Positioning Device System** – A work positioning device connected to a **body belt** or **body harness** and rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, ladder, pole, tower, or similar structure and work with both hands free.
- 4.25. **Qualified Person** – Typically a Professional Engineer, one who has a higher skill level than a **competent person**, and who solves problems (such as **anchor point** estimations) and approves plans (such as fall protection plans).
- 4.26. **Scissors Lift (and Aerial Work Platform)** – Elevating equipment on a mobile unit for the transportation of personnel from level to level. **Scissors lifts** and aerial work platforms have vertical movement and cannot move horizontally without moving the mobile unit.
- 4.27. **Self-Retracting Lanyard/Lifeline** – A **deceleration device** containing a drum-wound line that can be slowly extracted from, or retracted onto the drum, under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
- 4.28. **Shock Absorbing Lanyard** – A **lanyard** with a built-in energy absorber that limits fall arrest forces by absorbing up to 80 percent of the arresting force, and that limits **deceleration distance** to a maximum of 42 inches. The shock-absorbing end is connected to the user's harness.
- 4.29. **Snaphook** – A connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.
- 4.30. **Suspension Trauma – Orthostatic intolerance** caused by the sustained immobility of a worker suspended by his/her **personal fall arrest system**. **Suspension trauma** is especially dangerous because, if the victim faints, he/she will not assume a position (legs level with heart) that will enable him/her to regain consciousness.
- 4.31. **Suspension Trauma Relief Device** – A safety strap used by a worker who, after a fall, is suspended by a PFAS. The strap enables the worker to stand up in his/her harness so as to increase blood flow to the legs and prevent or alleviate **suspension trauma**.





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- 4.32. **Travel Restraint System** – A combination of **anchorage**, **anchorage connector**, **lanyard** (or other means of connection), and **body belt** or **body harness** that limits travel in such a manner that the user is not exposed to a fall hazard.
- 4.33. **Unprotected Side or Edge** – Any side or edge (except at entrances to points of access) of a **walking/working surface**, e.g., floor, roof, ramp, or runway, where there is no wall or **guardrail system**.
- 4.34. **Walking/Working Surface** – Any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to floors, roof, ramps, bridges, runways, formwork and concrete reinforcing steel.
- 4.35. **Warning Line System** – A **barricade** erected to warn employees that they are approaching a fall hazard.

## 5. MAIN BODY

### 5.1. Conditions Where Fall Protection is Required

- 5.1.1. **Bucket Trucks/Manlifts/Scissors Lifts/Aerial Work Platforms** – Each employee working aloft in a bucket truck or manlift shall use a personal fall arrest system consisting of a body harness and either a lanyard, shock absorbing lanyard, or self-retracting lanyard/lifeline.

**NOTE:** Regardless of whether a **guardrail system** is in place, an employee working on a **scissors lift** or **aerial work platform** is required to use a **personal fall arrest system** when anchor points are provided.

- 5.1.2. **Poles and Towers** – Each employee **aloft** shall be protected from falling by a **personal fall arrest system** or a **positioning device system**. Each employee shall use a **personal fall arrest system** or a **positioning device system** while ascending and descending wood poles to provide full fall protection.
- 5.1.3. **Unprotected Side or Edge** – Employees on a **walking/working surface** 4-feet or greater above a lower level and within 6-feet of an **unprotected side or edge** shall be protected by an **approved fall protection system**.
  - 5.1.3.1. Employees working near an open manhole, vault or other underground structures shall use an approved fall protection system.
  - 5.1.3.2. Employees working on structures or roofs shall use an approved fall protection system unless:
    - a) working on non-PPL property in which fall protection is not feasible,  
OR





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- b) the use of conventional fall protection equipment is not feasible or it creates a greater hazard: In this situation, contact a **qualified person** to prepare and approve alternate task-specific work procedures.

5.1.4. **Holes** – Each employee **aloft** on **walking/working surfaces** shall be protected from falling through **holes** (including skylights), by an **approved fall protection system** and/or covers.

5.1.5. **Formwork and Reinforcing Steel** – Each employee **aloft** on the face of formwork or reinforcing steel shall be protected by an **approved fall protection system**.

5.1.6. **Ramps, Runways and Other Walkways in Construction Activities** – Each employee **aloft** on ramps, runways and other walkways shall be protected from falling by **guardrail systems**.

5.1.7. **Excavations** – When an excavation is not readily seen because of plant growth or other visual barriers, each employee at the edge of the excavation such as a well, pit, shaft, trench, or unattended pole **hole**, 4 feet or more in depth, shall be protected from falling by an **approved fall protection system, barricades**, and/or covers.

5.1.8. **Ladders**

- a) Employees working from a properly secured (tied off) straight or extension ladder shall wear a **positioning device system** securely attached to the ladder or a fall arrest harness with a **lanyard** attached to an **anchor point** independent of the ladder.
- b) Employees working from an unsecured straight or extension ladder (ladder that cannot be tied off) must maintain a proper body position when working from the ladder and, if available, shall:
- wear a **personal fall arrest system** attached to an **anchor point** independent of the ladder, OR
  - use of a second person to steady the bottom of the ladder.
- c) Proper body position on a ladder requires the employee to keep the centerline of the chest within the side rails of the ladder at all times.
- d) Employees shall use a personal fall arrest system when ascending or descending any ladder in a manhole, vault, or other underground structure that is 4 feet or greater in depth.

5.2. **Wall Openings**



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5.2.1. Each employee working on, at, above, or near wall **openings** (including those with chutes attached) where the outside bottom edge of the wall **opening** is 4 feet or more above lower levels and the inside bottom edge of the wall **opening** is less than 39 inches above the **walking/working surface**, shall be protected from falling by an **approved fall protection system**.

5.3. Walking/Working Surfaces Not Otherwise Addressed

5.3.1. Each employee **aloft** on a **walking/working surface** not otherwise addressed in this document shall be protected from falling by an **approved fall protection system**.

5.4. Fall Protection Systems

5.4.1. Guardrail Systems

- a) Top edge height of top rail or chain must be 42 inches  $\pm$ 3 inches above the walking/working level and be able to withstand a force of 200 pounds downward and outward against it.
- b) If guardrails are constructed of wood, they must be 2"  $\times$  4" or **equivalent** in strength.
- c) Supports (posts) must be placed at intervals of 8 feet or less.
- d) A mid-rail shall be installed midway between the top edge of the upper rail and the walking/working level and be able to withstand a force of 150 pounds downward and outward against it.
- e) A **guardrail system** shall have smooth surfaces to prevent injury and snagging of clothing.
- f) If wire rope is used for top rail or midrail, it shall be flagged at not more than six-foot intervals with high-visibility material.
- g) The wire rope must be at least 5/16 inches in diameter.
- h) When a **guardrail system** is used at a **hoist area**, chains, gate, or a removable guardrail section shall be placed across the access **opening** between guardrail sections when hoisting operations are not taking place.
- i) When a **guardrail system** is used around a **hole**, it shall be erected on all **unprotected sides and edges** of the **hole**.
- j) When a **guardrail system** is used around a **hole** for the passage of materials, the **guardrail system** shall have no more than two sides with removable sections to allow the passage of materials. When the



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**hole** is not in use, it shall be closed over with a cover, or a **guardrail system** shall be erected along all **unprotected sides or edges**.

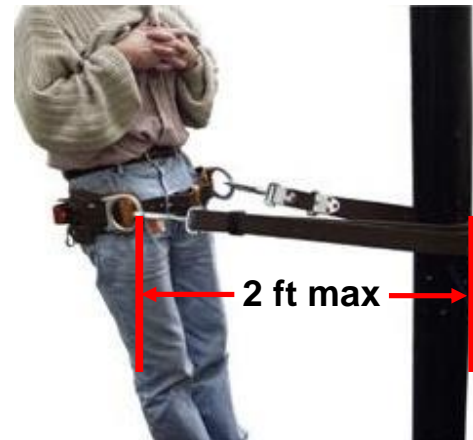
- k) When a **guardrail system** is used around a **hole** that is used as a point of access (such as a ladder-way), it shall be provided with a gate or chains, or shall be so offset that a person cannot walk directly into the **hole**.
- l) **Guardrail systems** used on ramps and runways shall be erected along each **unprotected side or edge**.

### 5.5. Travel Restraint Systems

- 5.5.1. **Travel restraint systems** shall be inspected prior to each use for wear, damage and other deterioration; and defective components shall be removed from service.
- 5.5.2. **Travel restraint systems** are permitted only on **walking/working surfaces** with a slope less than or equal to 4-in-12 (18.4 degrees).
- 5.5.3. Each **anchor point** must be capable of supporting at least 1,000 pounds per employee attached; or, under the supervision of a **qualified person**, shall be designed and installed such that it supports at least twice the foreseeable force.

### 5.6. Positioning Device Systems

- 5.6.1. **Positioning device systems** shall be inspected prior to each use for wear, damage and other deterioration; and defective components shall be removed from service.
- 5.6.2. **Positioning device systems** shall be rigged such that an employee cannot **freefall** more than 2 feet.
- 5.6.3. Each **anchor point** must be capable of supporting at least 3,000 pounds per employee attached; or, under the supervision of a **qualified person**, shall be designed and installed such that it supports at least twice the foreseeable force.
- 5.6.4. When using **positioning device systems**, **snaphooks** shall be attached only to D-rings. Only locking type may be used—the locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection.





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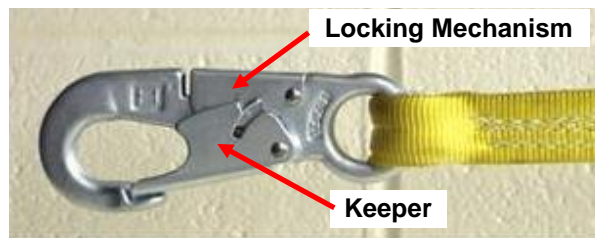
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5.6.5. When feasible, **positioning device systems** shall be backed up by **personal fall arrest systems**. This can be accomplished as long as an additional hazard is not created.

### 5.7. Personal Fall Arrest Systems

5.7.1. To minimize the potential for accidental disengagement, a **competent person** must ensure system compatibility of **personal fall arrest system** components.

5.7.2. A locking-type **snaphook** shall be used to attach the **lanyard** to an **anchor point**. (See photo.)



5.7.3. Unless it is designed specifically for that application, a locking type **snaphook** shall not be engaged:

- a) Directly to the webbing, rope or wire rope.
- b) To another **snaphook**—**Snaphooks** are not intended to be used that way and could twist apart.
- c) To a D-ring to which another **snaphook** or other connector is attached.
- d) To a horizontal **lifeline**.
- e) To any object which is incompatibly shaped or dimensioned in relation to the **snaphook** such that the connected object could depress the **snaphook** keeper a sufficient amount to cause it to release.

5.7.4. Horizontal **lifelines** shall be designed, installed and used as part of a complete **personal fall arrest system** which withstands at least twice the maximum arresting force required per employee on a **lifeline**.

5.7.5. **Lanyards** and vertical **lifelines** shall have a minimum breaking strength of 5,000 pounds. When vertical **lifelines** are used, each employee shall be attached to a separate **lifeline**.



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5.7.6. **Self-retracting lanyards/lifelines** should be utilized whenever possible, since these devices typically yield the lowest arresting forces and the shortest **freefall distances**. The user must select the best device for this particular application. (See photo.)

5.7.7. **Lifelines** shall be protected from cuts and abrasions by avoiding contact with sharp edges and excessive rubbing against abrasive surfaces.

5.7.8. An **anchor point** used for the attachment of personal fall arrest equipment shall be independent of any **anchorage** being used to support or suspend platforms. It must be capable of supporting at least 5,000 pounds per employee attached; or it shall be designed and installed:

- a) as part of a complete **personal fall arrest system** which maintains a safety factor of at least two; and
- b) under the supervision of a **qualified person**.

5.7.9. A **personal fall arrest system** shall:

- a) be rigged such that employees can neither **freefall** more than 6 feet or contact any lower level; nor swing into anything in the event of a fall.
- b) bring an employee to a complete stop and limit the maximum **deceleration distance** an employee travels to 42 inches.
- c) have sufficient strength to withstand twice the potential impact energy of an employee freefalling a distance of 6 feet or the **freefall distance** permitted by the system, whichever is less.

5.7.10. The attachment point of the **body harness** shall be located in the center of the user's back near shoulder level, or above the user's head.

5.7.11. **Personal fall arrest systems** and components subjected to impact loading shall be immediately removed from service and returned to Environmental Health & Safety.





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### 5.8. Approved Fall Protection System (AFPS) Documented Inspection Process

#### 5.8.1. All **approved fall protection systems**, except guardrail systems, shall comply with the following requirements:

5.8.1.1. An **AFPS** shall be inspected by its user prior to each use for wear, damage and other deterioration; and defective components shall be removed from service immediately and discarded.

5.8.1.2. After an **AFPS** component has been put into service, a formal inspection shall be conducted by a **competent person** other than the primary user at intervals not to exceed one year.

5.8.1.2.1. [PPL Form 5172: Annual Personal Fall Protection Inspection Log and Guide](#) shall be used for documentation of the annual inspection.

5.8.1.2.2. Inspection records shall be entered into CCATS per Attachment A: Fall Protection Inspection Entry Job Aid

### 5.9. Fall Rescue Plan

5.9.1. As part of your tailboard, identify and review **rescue plans** with employees.

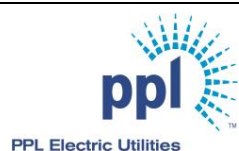
5.9.1.1. Review the rescue plan and document highlights on the Tailboard form.

5.9.1.2. Identify jobsite hazards.

5.9.1.3. Specify and make available rescue equipment.

5.9.2. A worker who falls while using a fall arrest system, and who remains suspended in the harness, may experience **suspension trauma** (or **orthostatic intolerance**). The resulting accumulation of blood in the legs can cause fainting, and in rare cases can be fatal.

5.9.2.1. Other symptoms of **suspension trauma** include light-headedness, palpitations, tremors, poor concentration, fatigue, nausea, dizziness, headache, sweating, weakness, faintness, breathlessness, paleness, hot flashes, increased heart rate, unusually low heart rate, unusually low blood pressure, “graying”/loss of vision and occasionally fainting.



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5.9.3. Factors that can affect the degree of risk of **suspension trauma** are:

- Inability to Move Legs
- Pain
- Injuries During Fall
- Fatigue
- Dehydration
- Hypothermia
- Shock
- Cardiovascular Disease
- Respiratory Disease
- Blood Loss

5.9.4. Care must be taken when rescuing someone exhibiting symptoms of **suspension trauma** *not to move the worker into a horizontal position too quickly*, which could cause a large volume of low-oxygen blood to move rapidly to the heart and lead to a heart attack.

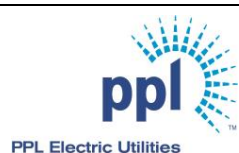
5.9.5. The use (by the suspended worker) of a **suspension trauma relief device** can prevent or alleviate **suspension trauma**. The strap, which is a component of the **personal fall arrest system**, allows the worker to stand up in his/her harness, which in turn:

- a) relieves the pressure applied by the harness to the veins and arteries at top of the legs, and thus allows more blood flow
- b) allows the worker to exercise his/her leg muscles, which will promote more blood flow

Either one or two feet can be placed in the strap.

Most major fall protection manufacturers produce a variation of a **suspension trauma relief device**, so always refer to the manufacturer's instructions for use. All Personal Fall Arrest System's shall be equipped with **suspension trauma relief device effective January 1, 2013**.





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### 6. REFERENCES

- 6.1. [PPL Form 5172: Annual Personal Fall Protection Inspection Log and Guide](#)
- 6.2. ANSI Z359-2007 Fall Protection Code
- 6.3. SP 14 Scaffolds
- 6.4. SP 35 Ladders
- 6.5. MST 210: Fall Protection
- 6.6. MST 744 (CBT): Fall Protection and Scaffold User

### 7. REGULATORY REQUIREMENTS

- 7.1. OSHA 29 CFR 1910 Subpart D (Walking/Working Surfaces)
- 7.2. OSHA Subpart M - Fall Protection 1926.500, 501, 502, 503
- 7.3. OSHA Subpart R - 1910.269
- 7.4. ANSI Z359-2007 Fall Protection Code

### 8. TRAINING

- 8.1. An employee who has successfully completed the following MST courses has attained the necessary skills shall serve as a **competent person**.
  - MST744 (Fall Protection and Scaffold User) and
  - MST745 (JPM – Donning a Full Body Harness)

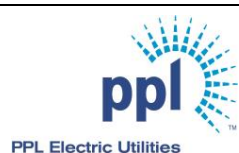
### 9. COMPLIANCE AND EXCEPTIONS

- 9.1. Not applicable

### 10. ATTACHMENTS

- 10.1. Attachment A: Fall Protection Inspection Entry Job Aid





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### 11. RECORD RETENTION

- 11.1. Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2. This document shall be reviewed every 5 years by Electric Utilities' Safety Operations.
- 11.3. The review shall be facilitated by the Records Management Coordinator (RMC).

### 12. RECORD OF REVISIONS

Rev	03	Date	02/01/21	Effective	04/22/2021
<b>Prepared by:</b>		Brian Kostik – Proj Mgr- Health and Safety			
<b>Reviewed by:</b>		Safety Operations Safety Professionals:			
<b>Approved by:</b>					
<b>Revision Comments:</b>		Updated 5.1.3 to be consistent with new safety rule. Added 5.1.3.1. Added 5.1.3.2. Added 5.1.8 (d)			

Rev	02	Date	12/15/17	Effective	2/1/2018
<b>Prepared by:</b>		Steve Mondschein – Health and Safety Specialist			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Replaced 5-year equipment replacement requirement with inspection-based replacement. Added annual inspection documentation process. Removed Safety Monitoring system and safety net requirements due to not be applicable to PPL EU work.			

Rev	01	Date	01/17/2017	Effective	3/17/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with OSHA 29 CFR 1910 Subpart D (Walking-Working Surfaces) and related changes that became effective at various starting dates of 1/17/2017 and beyond.			

Rev	00	Date	07/20/2012	Effective	07/20/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, and Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

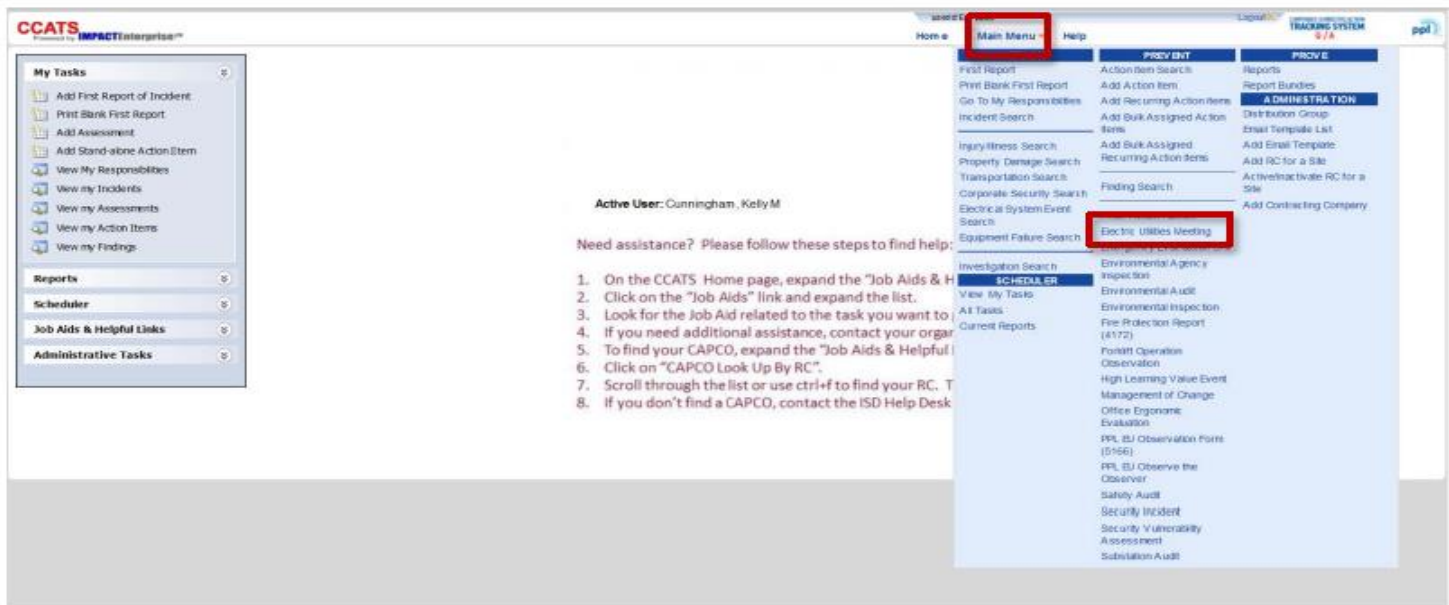


## SP 02 SAFETY PROCEDURE FALL PROTECTION

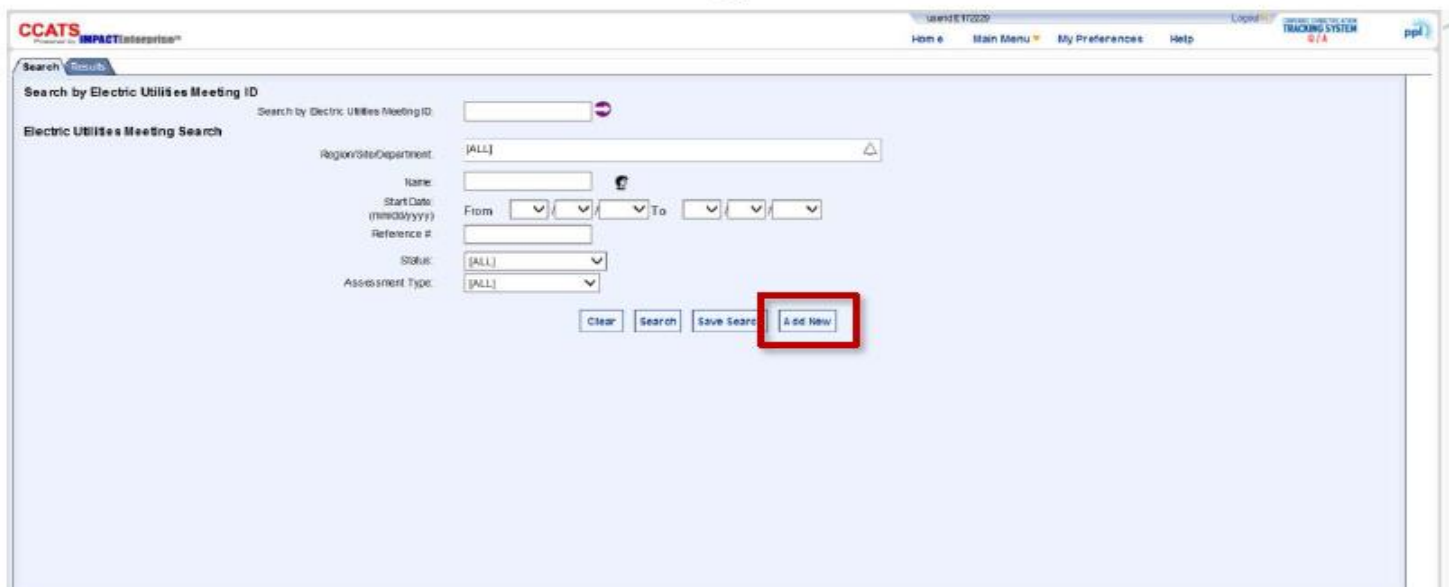
0000-000-PR-8001  
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### Attachment A Fall Protection Inspection Entry Job Aid

From the CCATs home page, select 'Main Menu'. A new drop down menu will appear. From this menu, select 'Electric Utilities Meeting'.



On the next screen that appears, select 'Add New'.





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To choose your RC/site, click on the arrow to expand the list. The service centers are in alphabetical order, so click on the '+' to continue expanding until you find your RC under the site.

CCATS  
Powered by IMPACT Enterprise

Select Assessment Type

RC Site: \* [Dropdown Arrow] [Expand Icon]

Assessment Type: \*

- Last Selected Sites
- [+] [SETSC-PPL Bathsheam Service Center] - [PRASC-PPL Providence Service Center]
- [+] [SETSC-PPL Bathsheam Service Center]
- [+] OH45 Lehigh Region Admin & Support
- [+] OH45 Lehigh Region Desktop
- [+] OH45 Lehigh Region T&O
- [+] OH45 Lehigh Region Training
- [+] OH45 Lehigh Building Services
- [+] [SETSC-PPL Bloomsburg Service Center]
- [+] [SETSC-PPL Bunnell Service Center]

Back Create

When you select your RC/site, the Assessment Type will automatically populate to 'Electric Utilities Meeting'. Then click 'Create'.

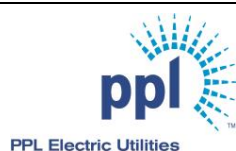
CCATS  
Powered by IMPACT Enterprise

Select Assessment Type

RC Site: \* [SETSC-PPL Bathsheam Service Center - OH45 Lehigh Region T&O]

Assessment Type: [Electric Utilities Meeting]

Back Create



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Fill in the appropriate information (text below is an example).

RC/Site:	BETSC-PPL Bethlehem Service Center : 0448 Lehigh Region T&D		
Assessment Type:	Electric Utilities Meeting		
Status:	Open		
Short Description:	Annual Fall Protection Inspection	In Short Description, describe what the meeting is.	<input type="button" value="Collapse"/>

### Additional Information

Description:	*	Annual Fall Protection Inspection for Bethlehem T&D group.	In Description, include the work group inspections are completed for.
Date Occurred (m/d/yyyy):	*	1/5/2018 9:12	Enter date the meeting took place. Select 'Fall Protection Inspection' for Meeting Type.
Meeting Type:		Fall Protection Inspection	

To enter the Organizer or Attendee, type in the employee's last name. CCATs will then search the address book and auto populate. When complete, select 'Save'.

### Responsibilities

Created By <input type="button" value="+"/> (Minimum - 1)		
Created By: *	Cunningham, Kelly M <input type="button" value="Search"/>	Your name will auto populate here.
Organizer <input type="button" value="+"/>		
Organizer:	<input type="text"/> <input type="button" value="Search"/>	Starting with the last name, type in the Organizer.
Attendee <input type="button" value="+"/>		
Attendee:	<input type="text"/> <input type="button" value="Search"/>	Starting with the last name, type in the Attendees. Click the '+' to add more than one Attendee.
Attendee:	<input type="text"/> <input type="button" value="Search"/>	
Attendee:	<input type="text"/> <input type="button" value="Search"/>	

### Attachments **Do not attach non-public Transmission Function Information or Critical Cyber Asset Information**

<input type="button" value="Add File"/>	<input type="button" value="Add Link"/>	Add completed Annual Fall Protection Inspection Record Document. Attachment B.	
Type	File/Link	Comments	
<input type="button" value="Back"/>	<input type="button" value="Action Items"/>	<input type="button" value="Save"/>	Select 'Save' when complete.



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**ATTACHMENT A – Form 4478 – Confined/Enclosed Space Entry Documentation**Error! Bookmark not defined.

**ATTACHMENT B – Decision Making Process Entering/Working Confined/Enclosed Spaces**Error! Bookmark not defined.

## NAVIGATING THIS DOCUMENT (PDF)

1. Click any **Table of Contents** link or other [links](#) to go to that section. (In Word, press **Ctrl** then click the [link](#).)
2. Hold **Ctrl** then press **←** (back arrow) to go to last place viewed in the PDF (for most MOM Toughbooks®).
3. Hold **Alt** then press **←** (back arrow) to go to last place viewed in the PDF (for most office laptops).

**Press and hold “Ctrl and F” to search keywords in the PDF.**

 PPL Electric Utilities	<b>SP 03</b> <b>SAFETY PROCEDURE</b> <b>CONFINED/ENCLOSED SPACE ENTRY</b>	0000-000-PR-8002 Custom ID: SP 03 Revision: 04 Effective Date: 04/22/2021 Page 2 of 17
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## **1.0 PURPOSE/SCOPE**

- 1.1** This procedure provides requirements that protect workers from hazards when entering and working in confined and enclosed spaces, such as manholes, tanks, vessels, silos, storage bins, hoppers, vaults and pits.

## **2.0 RESPONSIBILITY**

### **2.1 Attendant**

- 2.1.1** The attendant must remain outside occupied, enclosed or permit space(s) at all times during the job, unless relieved by another qualified attendant.
- 2.1.2** Maintain continuous atmospheric monitoring for enclosed and permit spaces.
- 2.1.3** Communication between the entrants and attendant must be maintained for the duration of the entry.
- 2.1.4** Welding Gas cylinders shall not be taken into a confined space.
- 2.1.5** Ladders and other means of exit shall be kept in place for the duration of the entry.
- 2.1.6** Only allow entry by qualified entrants (including rescuers).
- 2.1.7** Be prepared for emergency situations, including non-entry rescue and calling for help.
- 2.1.8** Accounting for entrants and ordering them out when:
- There is an emergency in another confined space.
  - An alarm sounds.
  - An unauthorized entry occurs.
  - An entrant's behavior has changed.
  - The attendant cannot safely and effectively perform required duties.

### **2.2 Entry Supervisor**

- 2.2.1** The entry supervisor provides peer checks for the attendant's responsibilities. Usually one of the entrants will be the entry supervisor.
- 2.2.2** The entry supervisor is responsible for:
- Staying at the job site when entrants are in the space.
  - Ensuring the hazard assessment was completed properly with calibrated equipment.
  - Ensuring that the proper equipment, including rescue equipment, is set up.
  - Preplanning and coordinating rescue activities.
  - Authorizing and terminating entry by endorsing [Form 4478 \(Conf Space Entry Documentation\)](#)





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**2.3 Management**

**2.3.1** Management is responsible for the implementation and enforcement of this procedure.

**3.0 APPLICABILITY**

**3.1** This procedure applies to all PPL EU employees entering and working in confined and enclosed spaces.

**3.2** Examples of confined and enclosed spaces include manholes, tanks, vessels, silos, storage bins, hoppers, vaults and pits.

**4.0 TERMS AND DEFINITIONS**

**4.1** ATTENDANT – A person positioned outside one or more permit or enclosed spaces who is trained in atmospheric monitoring, hazard recognition, monitoring entrants and procedures for rescue.

**4.2** AUTHORIZED ENTRANT – A person trained and authorized to enter a confined or enclosed space.

**4.3** CONFINED SPACE – A confined space must have all of the following properties:

**4.3.1** Is large enough and so configured that a person can bodily enter and perform assigned work.

**4.3.2** Has limited or restricted means for entry or egress.

**4.3.3** Is not designed for continuous occupancy by a person.

**4.4** ENGULFMENT/ENTRAPMENT – The surrounding and effective capture of a person by a liquid, flowable solid substance or other element that can be aspirated or a device that can exert enough force on the body to cause strangulation, constriction or crushing effects.

**4.5** ENCLOSED SPACE – A confined space where the only hazard is energized electrical conductors.

**4.6** ENTRANT – A person who enters a confined or enclosed space.

**4.7** ENTRY – The action of a person passing through an opening into a confined or enclosed space. Entry is considered to have occurred when any part of the person's body breaks the plane of an opening into the space.

**4.8** NON-PERMIT CONFINED SPACE – A confined space that does not contain any hazard or potential hazard capable of causing death or serious harm to occupants due to:

**4.8.1** Elimination of hazards.

**4.8.2** The natural characteristics of the space.

**4.9** PERMIT – The Confined/Enclosed Space Entry Documentation form (PPL Form 4478) that lists specifications and authorization for entry and work to be performed in a permit-required confined space (AKA Hazard Assessment documentation).



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- 4.10** PERMIT-REQUIRED CONFINED SPACE (PRCS) – A confined space that has one or more of the following characteristics:
  - 4.10.1** Contains or has the potential to contain a hazardous atmosphere.
  - 4.10.2** Contains a material that has the potential for engulfing an entrant.
  - 4.10.3** Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.
  - 4.10.4** Contains any other recognized serious safety or health hazard.
- 4.11** RESCUE
  - 4.11.1 ENTRY** – Rescue of entrants from a confined space by trained personnel physically entering the space.
  - 4.11.2 NON-ENTRY** – Rescue of entrants from a confined space by trained personnel without entering the space.
- 4.12** RESCUER – A person trained in confined space emergency rescue techniques, CPR and first aid. A Rescuer may be a member of an external emergency service agency trained in rescue techniques.
- 4.13** RETRIEVAL SYSTEM – Equipment used for non-entry or entry rescue of persons from a confined or enclosed space. This includes a retrieval line, full body harness, wristlets if appropriate, lifting device and anchor point.

## **5.0 MAIN BODY**

- 5.1** Team Member Qualification
  - 5.1.1** All entrants, attendants, entry supervisors and rescuers must meet the training qualifications in Section 8 of this procedure.
  - 5.1.2** Completion of MST140 (Confined Space Entrant, Attendant, and Entry Supervisor) and MST142 (Using Atmospheric Monitors) training (or equivalent) one time. MST140 meets the OSHA training requirements and can be referenced for additional specific information.
  - 5.1.3** Each year, confined space employees must complete MST141 (Confined Space Refresher CBT) to remain current and qualified.
  - 5.1.4** All entrants into enclosed spaces must be Qualified Electrical Workers as defined in the PPL Safety Rule Book. If non-Qualified Electrical Workers have a need to enter a space with energized conductors, the space must be classified as a 'permit required' confined space.
- 5.2** Job-Site Setup
  - 5.2.1** Harnesses must be worn by all entrants at all times.
  - 5.2.2** Protection around the opening must be provided, ensuring no one falls into the opening. For example, when using the yellow manhole guard, hooking the chains, having the ladder in place, or blocking the entrance in some other way, are acceptable configurations.





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- 5.2.3** Open manholes or vaults shall be rendered inaccessible for pedestrians when unattended using an approved method.
- 5.2.4** Open manholes or vaults shall be protected from vehicular traffic using an approved method.
- 5.2.5** A minimum of 3½ vertical inches of protection must be provided around the entrance opening where foreign objects can enter the space.
- 5.2.6** The opening's cover must have either a vented area equal to a 1" diameter hole, or another equally effective means to ensure no pressure has built up before removing the cover.
- 5.2.7** Prior to removing the cover, check to ensure that the cover is no more than 100°F above ambient temperature.

**5.3 Hazard Assessment**

- 5.3.1** The attendant must document a hazard assessment (AKA Permit) on PPL Form 4478 before entry.
- 5.3.2** The hazard assessment must be redone anytime anyone enters a space that has been vacated for more than 15 minutes.
- 5.3.3** Acceptable entry readings are:
  - 20.9% Oxygen (between 19.5% and 23%)
  - 0% Lowered Explosive Limit (<10%)
  - 0 PPM Carbon Monoxide(<25 PPM)

**NOTE** – While the range of values in ( ) are “acceptable”, they may be near the alarm point. Values close to 20.9, 0 and 0 are typical and should be expected.

- 5.3.4** No one is permitted in the space when the monitor is alarming. The alarm settings are:
  - 19.5 Oxygen deficient
  - 23% Oxygen enriched
  - 10% Lowered Explosive Limit
  - 25 PPM Carbon Monoxide
- 5.3.5** Hazards are any serious safety or health hazard. This following hazard list is not all-inclusive:
  - Biological and animal
  - Darkness
  - Electrical
  - Electrical arcing
  - Excessive depths or heights
  - Excessive heat or cold
  - Flowing liquids
  - Hazardous atmosphere
  - Hydraulic
  - Inwardly converging walls
  - Mechanical machinery
  - Noise
  - Open flames



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- Pneumatic
- Slips, trips, and fall hazards
- Sloping floor
- Solids that can flow
- Stored energy
- Structural stability or materials falling
- Water that hides hazards

**5.3.6** Ventilate the space for at least 10 minutes if the oxygen levels are not acceptable or if there is not a zero (0) reading on combustible or toxic scales.

- Turn the ventilation off after 10 minutes and record the atmospheric readings again.
- Ventilation must be continuous if the readings are not normal after the 10 minutes of ventilation.

**5.4** Classifying the Space

**5.4.1** Limited or restricted entry and exit can include any area that:

- Several people could not get through quickly, OR
- An employee cannot walk upright and unimpeded through, OR
- That requires a lengthy distance of travel to a point of safety, OR
- Requires ladders. Adding a second ladder does not remove the limited or restricted exit.

**5.4.2** Lights and receptacles do not count as a hazard or “energized” for enclosed and permit space determination.

**5.4.3** Spaces with energized cables that are insulated and separated from the entrants by a barrier can be classified as non-permit spaces if there are no hazards.

**5.4.4** Manholes and vaults deeper than 4 ft. with the top removed during construction are still considered to be confined spaces.

**5.4.5** Use the flowchart below to classify the space ([Figure 1](#)).

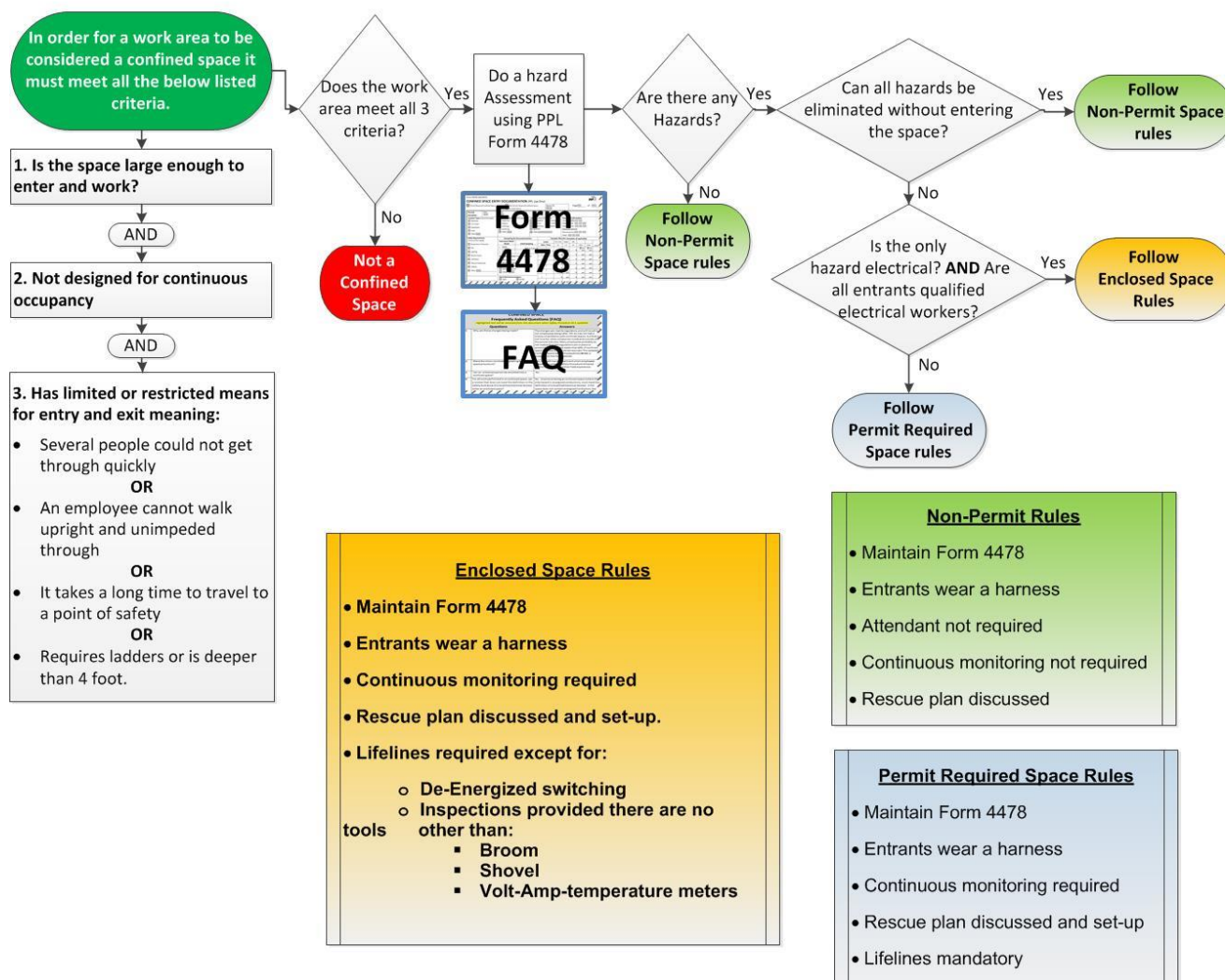


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**Figure 1 – Flowchart Used to Classify Space**

**Confined Space Flowchart**





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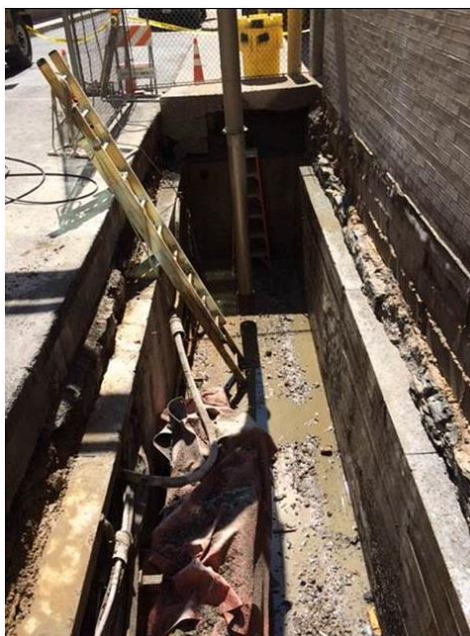
**5.5** Rescue Plan

**5.5.1** Rescue and retrieval equipment is required to be set up and ready for enclosed and permit-required entries. It is recommended that the retrieval and rescue equipment is set up and ready for non-permit entries.

**5.5.2** A separate attached lifeline shall be used by all workers entering a permit-required space with the free end of the line secured near the set up retrieval equipment with a break-away connection if exposed to traffic. A lifeline is recommended but not required for:

- Entry into non-permit required confined space.
- Employees that are switching de-energized devices in an enclosed space.
- Employees performing inspections in an enclosed space. To take advantage of this lifeline exemption, tools during inspections will be limited to broom, shovel, flashlight, voltmeter, amp meter and temperature meter(s).
- Enclosed spaces where the square footage of the bottom/floor of the space is equal to the unrestricted opening at the top of a space +/- 10%. For this exemption, the crew must be prepared to remotely attach a lifeline for non-entry rescue, if needed. An example of this is the open top vault shown in [Figure 2](#).

**Figure 2 – Open Top Vault with Unrestricted Opening at the Top of a Space**





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- 5.5.3** Rescuers require harnesses. Rescue options include:
- Remove the worker by attaching the worker's lifeline to a non-powered retrieval device.
  - Have a prearranged non-PPL rescue team familiar with the space perform the rescue.
  - Do an entry rescue if required
- 5.5.4** A rescue plan must be discussed as part of the TAILBOARD.
- 5.5.5** A written rescue plan is required when a lifeline is required, but the supervisor can also establish that the lifeline use would increase the overall risk or would not contribute to the rescue. In this case, the supervisor must document on Form 4478 why the lifeline would not be used. These instances must be entered on the day of the entry in CCATS as an EU standalone action item (assigned to the Field Manager) for investigation and correction.
- 5.5.6** Non-entry rescue and non-permit required spaces with entry rescue do not require documentation other than on the TAILBOARD form.
- 5.5.7** The documented rescue plan must contain:
- The PPL designation of the space, the grid number and the nearest street address including ZIP code.
  - A description of why the plan is needed.
  - A list of any equipment not typically brought to the job by the crew.
  - The name and employee number of the person that developed the plan.
  - The name and employee number of the supervisor that reviewed the plan.
  - A detailed description of the elevated anchor that would be used for rescue; photos can be substituted.
  - A detailed description of how the entrant would be removed from the space.
  - The skills required for the rescuer.
- 5.5.8** The plan must be approved by the crew's supervisor and submitted to someone designated by TD&I Safety at the end of the shift. One plan is good for multiple shifts in the same space.
- 5.5.9** Before an entry rescuer can begin, tell the System Operator on the radio to call 911 for an ambulance for a confined space emergency and to call your supervisor. An attendant must be present outside of the space before entry rescue begins.
- 5.5.10** Plans that include entry rescue by non-PPL employees (911 or rescue contractors) must be preapproved by someone designated by TD&I Safety before entry.
- The rescue service must be contacted before they can be listed on Form 4478.
  - PPL must know if the rescue service will not be available. You cannot just list "call 911" and expect the 911 responders to provide rescue.



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**5.6 Contractors**

**5.6.1** PPL and the controlling contractor must communicate the following about permit-required confined spaces:

- The location and classification of the space.
- Any experience with hazards.
- What has been done to protect entrants?
- How they will coordinate any work when both the contractor and PPL workers are working in the same space.
- After the job is completed, PPL should debrief the contractor to make sure the program was followed and to share any information.

**5.7 Closing the Permit**

**5.7.1** After all entrants are signed out of the space and equipment restored, the entry documentation must be signed and dated by the entry supervisor as closed.

**5.7.2** The closed permit for Permit Required spaces and enclosed spaces will be retained for 6 months.

**6.0 REFERENCES**

**6.1** PPL EU Safety Rule Book

**7.0 REGULATORY REQUIREMENTS**

**7.1** OSHA 1910.146 – Permit Required Confined Spaces

**7.2** OSHA 1910.269 – Electric Power Generation, Transmission and Distribution

**7.3** OSHA 1926.1200 – Confined Spaces in Construction

**8.0 TRAINING / SAFETY**

**8.1** All persons shall be trained prior to performing an assignment associated with all confined spaces.


**8.1.1** The type and form of training required is dependent upon the task assigned to the person associated with confined or enclosed space entry. MST140 and MST142 or equivalent must be completed once for:

- Attendants
- Entrants
- Entry Supervisors
- Rescuer

**8.1.2** Each year confined space employees must complete MST141 (Confined Space Refresher CBT) to remain current and qualified.

**8.1.3** Entry rescuers must have MST150 (Individual Rescue) and the yearly rescue requalification, in addition to specific training for permit spaces based on the space, hazards and equipment used.



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## 9.0 COMPLIANCE AND EXCEPTIONS

- 9.1 This procedure applies to all PPL EU employees entering and working in confined and enclosed spaces on the PPL EU Transmission and Distribution System.
- 9.2 For the rare exceptions to this procedure, approval from the Manager of Safety Operations is required.

## 10.0 ATTACHMENTS

- 10.1 [Form 4478 - Confined Space Entry Documentation](#)
- 10.2 Decision-making Process - Entering & Working in Confined/Enclosed Spaces (see attached file bottom of THIS document)

## 11.0 RECORDS RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	04	Date	02/01/21	Effective	04/22/2021
<b>Prepared by:</b>		Tyler Honor – Safety Professional			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Dalton Shorts, Brian Kostik, Jared Dyer			
<b>Approved by:</b>		Chuck Wood, Manager – Safety Operations			
<b>Revision Comments:</b>		Added sections 5.2.3 & 5.2.4			

Rev	03	Date	11/19/2018	Effective	11/19/2018
<b>Prepared by:</b>		John Wirth, Sr. Training Specialist			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Supervisor-Safety Operations			
<b>Approved by:</b>		Jared Dyer, Supervisor-Safety Operations			
<b>Revision Comments:</b>		Removed unnecessary wording, updated the Figure 1 flow chart, removed the requirement for attendants to wear harnesses at all times.			

Rev	02	Date	07/10/2017	Effective	07/10/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Dalton Shorts, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reformatted and updated information to 2017 standards			

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<b>Rev</b>	01	<b>Date</b>	12/31/2015	<b>Effective</b>	12/31/2015
<b>Prepared by:</b>		John Wirth, Sr. Training Specialist			
<b>Reviewed by:</b>		Brian Kostik (Sr Health & Safety Specialist), Richard Horan (Sr Health & Safety Specialist), Debbie Sweinhart (Proj Mgr-Health & Safety)			
<b>Approved by:</b>		Brian Zickefoose (R-Mgr-Health & Safety-EU)			
<b>Revision Comments:</b>		Reformatted and updated information			

<b>Rev</b>	00	<b>Date</b>	6/26/2012	<b>Effective</b>	6/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer (Proj Mgr-Health & Safety), Adam Frederick (LGE-KU: Safety Specialist III), Richard Horan (Sr Health & Safety Specialist)			
<b>Approved by:</b>		Barry Downes (R-Mgr-Health & Safety-EU)			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





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 CONFINED/ENCLOSED SPACE ENTRY**

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<b>CONFINED SPACE</b>		
<b>Frequently Asked Questions (FAQ)</b>		
	<b>Questions</b>	<b>Answers</b>
<b>1</b>	Can an untrained person be escorted into a confined space?	No.
<b>2</b>	For all work performed in an enclosed space, can a worker that does not meet the definition in the Safety Rule Book of a Qualified Electrical Worker enter an enclosed space?	No. Anyone entering an enclosed space (where the only hazard is energized conductors), must meet the definition of a Qualified Electrical Worker. If the space does not contain energized conductors, the space is NOT to be considered an enclosed space.
<b>3</b>	Who determines if a worker is a Qualified Electrical Worker for a particular task?	The worker is qualified for a particular task if both the worker and their supervisor agree that the worker meets the definition of a Qualified Electrical Worker in the Safety Rule Book.
<b>4</b>	Are all entrants required to wear a harness?	Yes.
<b>5</b>	Can any full-body harness be worn?	Yes.
<b>6</b>	Must the entry supervisor remain at the job site after peer checking the job site setup and hazard assessment?	Yes.
<b>7</b>	OSHA now requires entrants to be protected from falling foreign objects. PPL says that the protection be at least 3.5 inches high. How close to the opening of the space does the 3.5 inches of foreign object protection need to be?	There is no specified distance as long as foreign objects are prevented from entering the space.
<b>8</b>	Must the end of the lifeline (opposite the end that is attached to the worker) be secured outside of the space?	Yes, both ends of the lifeline must be secured. One end attached to the worker and the other end attached outside of the space in a way that the end of the rope will not fall into the space.
<b>9</b>	Must the lifeline be connected via a breakaway connector?	Only if the outside connection point is on something that could be dragged if a vehicle hits what the line is connected to. If the connection point is the manhole guard and it is set up on the sidewalk, the breakaway is not required. The breakaway connection also is not required if the outside connection point is protected from traffic by a parked vehicle.



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<b>CONFINED SPACE Frequently Asked Questions (FAQ)</b>		
	<b>Questions</b>	<b>Answers</b>
<b>10</b>	Can the attendant leave the entrance to the space?	Yes, as long as the attendant can still meet their responsibilities outlined in SP 03.
<b>11</b>	Can a hook from a backyard machine, center mount boom, or knuckle boom be used as an elevated anchor?	Yes, as long as: <ul style="list-style-type: none"> <li>• The hook is not moved under the vehicle's power</li> <li>• The hook and "crane" must be less than 50% of the crane's positioned capacity</li> <li>• The hook's spring-loaded latch must be in the closed position</li> </ul>
<b>12</b>	Is an attendant required at a non-permit confined space?	No, as long as the hazard assessment is documented.
<b>13</b>	Are lifelines or rescue equipment required at a non-permit confined space?	No, but they are recommended.
<b>14</b>	Does a rescue plan need to be discussed before entering a non-permit confined	Yes.
<b>15</b>	Why should I call the System Operator (SO) on the radio and tell them to call 911?	Calling on the radio may bring experienced co-workers and having the SO call 911 will save time. 911 calls can take up to 2 minutes.
<b>16</b>	What address should be listed in the address section of the confined space form if the crew is not working near a building with an address?	Enter the address of a local building so that when the ambulance crew arrives at that address, you will see the ambulance and the ambulance crew will see you.
<b>17</b>	Can a Facility Management employee classify a confined space as enclosed?	No, the enclosed space is permitted under OSHA 1910.269, which does not apply to Facility Management (FM). FM is required to follow the more restrictive 1910.146 Permit-Required Confined Spaces standard.
<b>18</b>	Must rescue equipment be set up or readily available?	Rescue equipment must be set up.
<b>19</b>	Is a manhole with non-exposed, energized cables considered a non-permit confined space?	No. Energized cables are a hazard unless insulated and protected from physical damage.
<b>20</b>	Is a trench deeper than 4 ft. a confined space?	No, but if a potential atmospheric hazard can exist, the atmosphere of the trench must be checked.



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<b>CONFINED SPACE</b>		
<b>Frequently Asked Questions (FAQ)</b>		
<b>Questions</b>		<b>Answers</b>
<b>21</b>	Is the inside of a transformer or switchgear base that is deeper than 4 ft. considered a confined space?	Yes. Workers must have confined space entry training, do a hazard assessment on Form 4487, and wear a harness at a minimum if there are no hazards (non-permit space).
<b>22</b>	Does PPL require continuous monitoring for all permit and enclosed spaces?	Yes.
<b>23</b>	Are manholes and vaults deeper than 4 ft. with the top removed during construction still considered a confined space, even when multiple ladders are present?	Yes.
<b>24</b>	<p>If we arrive at a confined space and cannot wear a lifeline as required for permit spaces or enclosed spaces, can we still do the job?</p> <p>Note: Lifelines are not required for non-permit spaces</p>	<p>Yes, but you must follow the procedure outlined in SP 03. In general, the supervisor must document on Form 4478 why the lifeline would not be used. These instances must be entered into CCATS (assigned to the Field Manager) by the end of the workday for investigation and correction. A rescue plan must be documented and approved by the crew's supervisor and submitted to a safety professional or safety advocate at the end of the shift</p> <p>Lifelines are required in all permit- required spaces. As equipment becomes available, lifelines will be required in most enclosed spaces when performing work.</p>
<b>25</b>	Can a space that has energized cables and no other hazards be classified as a non-permit space if the cables are insulated and separated from the entrants by a barrier that effectively eliminates the hazard?	Yes.



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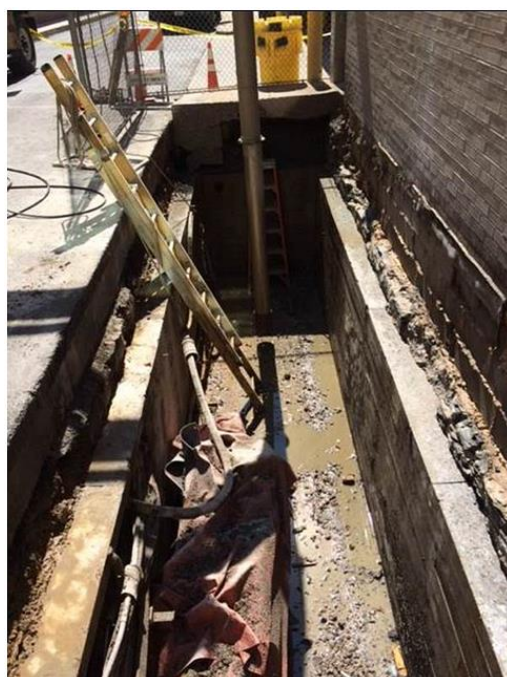
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## CONFINED SPACE Frequently Asked Questions (FAQ)

### Questions

### Answers

- 26** Will lifelines be required if we are working in an enclosed space where the entrance is large and only considered a “limited means of egress” because of the need for a ladder?



It depends. In enclosed spaces where the square footage of the bottom/floor of the space is equal to the unrestricted opening at the top of a space +/- 10%, and the crew is prepared to remotely attach a lifeline for non-entry rescue if needed, the lifeline is not required. A written rescue plan is not required. This exemption is in place for open top manholes and vaults but can be applied to any space that is not a permit space. (An example of this is the open-top vault shown in the photo on the left.)

Currently lifelines are required in most enclosed spaces where work is being done if the rescue equipment is available.



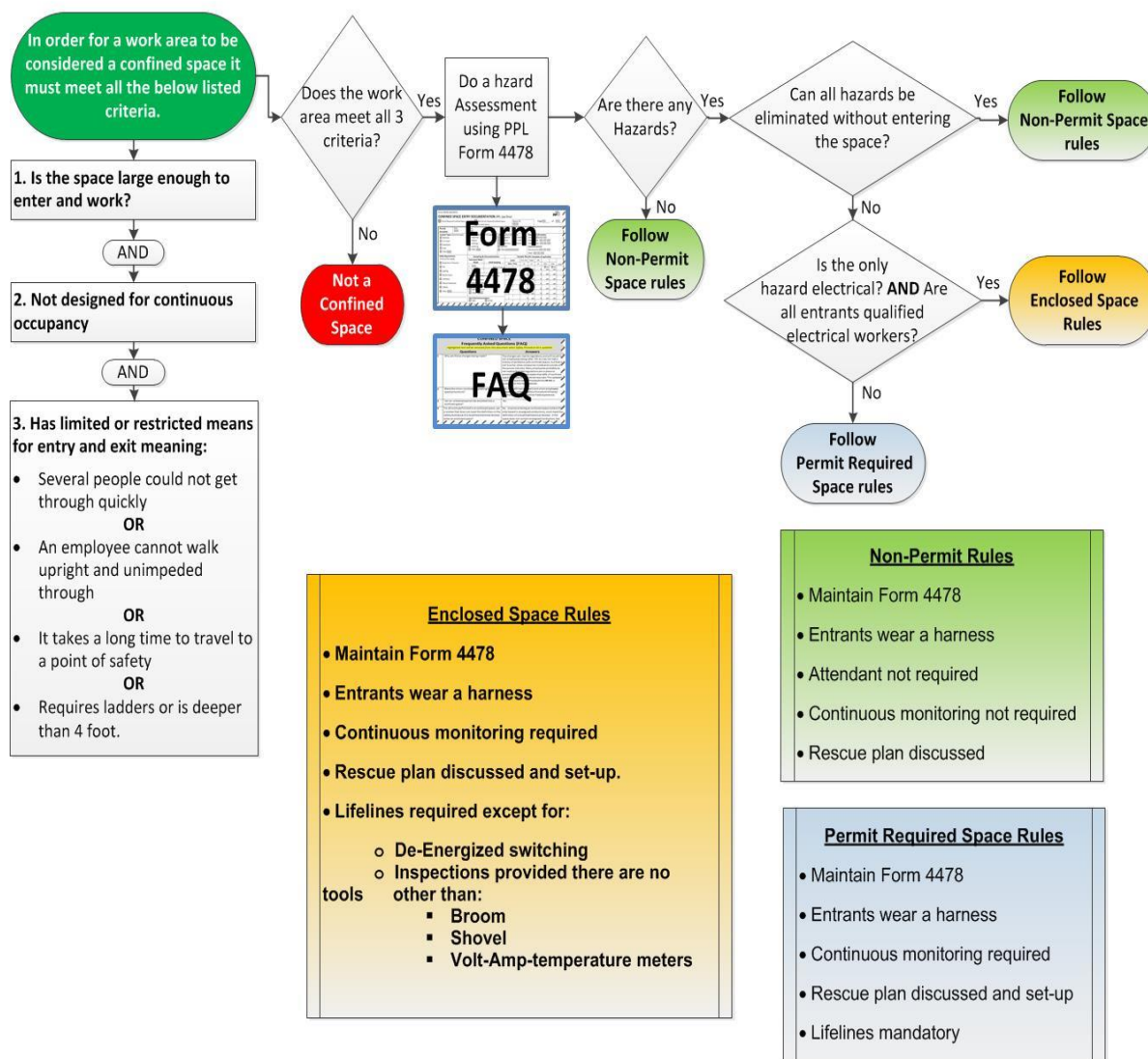
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## CONFINED SPACE (cont.)

*USE THIS FLOWCHART AS A GUIDE TO CLASSIFY THE SPACE AND REFERENCE THE GENERAL REQUIREMENTS*

### Confined Space Flowchart





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**SAFETY PROCEDURE**  
**FREQUENT EVENT MITIGATION**

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## **1.0 PURPOSE**

The purpose of this procedure is to minimize incident reoccurrence by the same individual and ensure they have been made aware of all the opportunities available to them to minimize injury potential or event reoccurrence. This procedure is to provide escalation guidance for managers who have employees with the following trends:

- 1.1 Personal injury (First Aid, OSHA recordable, DART)
- 1.2 Preventable Motor Vehicle Events
- 1.3 Electric System Events

## **2.0 SCOPE**

Employees who have had two (2) events within six (6) months or three (3) events within 24 consecutive months (2 years). Coaching elements include the following:

- 2.1 Ensure the employee has access to information and recommendations from analysis concerning the above categories.
- 2.2 Coaching on the availability of any benefits available to improve the above trends.
- 2.3 Coaching on any training available to improve the above trends.
- 2.4 Coaching on any tools available to improve the above trends.
- 2.5 Coaching on opportunities offered through Occupational Athletics

## **3.0 RESPONSIBILITY**

- 3.1 First Line Supervisor
  - 3.1.1 Conduct the appropriate level analysis for any personal injury, motor vehicle event or Electric System Event and enter into CCATS.
  - 3.1.2 Conduct a documented coaching secession with any direct report who has had two (2) events within six (6) months or three (3) events within 24 consecutive months (2 years). Ask if there is anything the company can do/provide to help improve or eliminate the trend.
  - 3.1.3 Notify and inform the appropriate Field Manager or Manager or appropriate second level management when an employee has met the threshold.
  - 3.1.4 Offer Employee information on any company benefits available that can help the employee improve and prevent reoccurrence of events.
  - 3.1.5 Offer Employee information on any company training available that can help the employee improve and prevent reoccurrence of events.
  - 3.1.6 Offer Employee information on any company tools available that can help the employee improve and prevent reoccurrence of events.



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- 3.2** Field Manager/Manager or appropriate 2<sup>nd</sup> level management
  - 3.2.1** Ensure First Line Supervisor has conducted the appropriate level analysis for any personal injury, motor vehicle event or Electric System Event and entered into CCATS.
  - 3.2.2** Conduct a documented coaching secession with First Line Supervisor and the Employee who has had more than two (2) events within six (6) months or three (3) events within 24 consecutive months (2 years) to cover the following:
    - 3.2.2.1** Communicate expectation for the Event Employee to utilize whatever benefits, training or tools necessary to prevent reoccurrence of events.
    - 3.2.2.2** Review First Line Supervisors documentation of employee.
      - 3.2.2.2.1** Past 3 year's performance review.
      - 3.2.2.2.2** Any documented coaching secessions
      - 3.2.2.2.3** Any past Responsible Behavior documentation.
  - 3.2.3** Notify HR and discuss options for making improvements.
  - 3.2.4** Notify Director when an Employee has had more than four (4) events within six (6) months or five (5) events within 24 consecutive months (2 years).
- 3.3** TDI Safety
  - 3.3.1** Provide incident trending data to appropriate level of management when the threshold for this procedure is met.
  - 3.3.2** Ensure this procedure is up to date
  - 3.3.3** Audit the compliance with this procedure
- 4.0** **APPLICABILITY**
  - 4.1** This procedure is applicable to any employee, supervisor or manager who has two (2) events within six (6) months or three (3) events within 24 consecutive months (2 years).
- 5.0** **TERMS AND DEFINITIONS**
  - 5.1** **Trend** – any employee who has had two (2) events within six (6) months or three (3) within 24 consecutive months (2 years).
- 6.0** **MAIN BODY**
  - 6.1** Any employee, who has any combination of events that meet the definition of a **Trend**, may go through the process outlined in this procedure.
  - 6.2** If a **Trend** is identified, the first line supervisor will conduct the appropriate level of analysis based on the severity of the event.





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- 6.3** Based on the findings from the analysis, the supervisor will have a documented coaching session with the employee to ensure they are aware of any and all opportunities available to the employee to help prevent reoccurrence of any type of event.
- 6.4** The supervisor will then notify their appropriate 2<sup>nd</sup> level management and inform them what steps have been taken thus far.
- 6.5** In the event an employee exceeds the **Trend** threshold, the 2<sup>nd</sup> level manager will conduct a documented coaching session with the first line supervisor and event employee to:
- 6.5.1** Communicate the expectations to utilize whatever tools, benefits or training available to the employee to prevent reoccurrence of an event.
  - 6.5.2** Review First Line Supervisors documentation of employee.
    - 6.5.2.1 Past 3 year's performance review.
    - 6.5.2.2 Any documented coaching secessions
    - 6.5.2.3 Any past Responsible Behavior documentation.
- 6.6** After this documented coaching session, the 2<sup>nd</sup> level manager will inform HR as well as their direct supervisor to evaluate any further action necessary.

**7.0 REFERENCES**

- 7.1** [Safety Procedure 31 – Incident Reporting & Analysis Process](#)
- 7.2** [PPL EU Corrective action program Investigation Procedure](#)

**8.0 REGULATORY REQUIREMENTS**

**9.0 TRAINING / SAFETY**

**10.0 COMPLIANCE AND EXCEPTIONS**

**11.0 ATTACHMENTS**

**12.0 RECORDS RETENTION**

- 12.1** Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 12.2** This document shall be reviewed every 5 years by Safety Operations.
- 12.3** The review shall be facilitated by the Records Management Coordinator (RMC).

**13.0 RECORD OF REVISIONS**




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<b>Prepared by:</b>		Jared Dyer, Supervisor-Safety Operations			
<b>Reviewed by:</b>		Safety Professionals:			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Title change and minor grammar changes to reflect feedback from Field Managers (removed the term "Program" and replaced "Investigation" with "Analysis").			

<b>Rev</b>	00	<b>Date</b>	02/20/2019	<b>Effective</b>	03/01/2019
<b>Prepared by:</b>		Jared Dyer, Supervisor-Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Elizabeth McKay, Dalton Shorts, Brian Kostik			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		New Safety Procedure			

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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this instruction is to have guidelines for temporary safety grounding and bonding when working on the Transmission & Distribution systems.
- 1.2 Provide instruction on how to install safety grounds in the T&D system and protect personnel working on or handling objects near lines and equipment and to minimize the hazards of electrical shock.

## **2.0 RESPONSIBILITY**

- 2.1 Management and Supervision – responsible for execution of this procedure
- 2.2 Safety Operations is responsible to review and keep this procedure up to date with all regulations

## **3.0 APPLICABILITY**

- 3.1 This procedure is applicable to all individuals performing work on or near T&D lines or equipment that require protection to minimize the hazards of electrical shock from static or induced voltage on the de-energized facility or the line becoming accidentally energized.



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## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Established Ground** – Any metallic structure, facility, or equipment which, by design, is electrically connected to the earth.
- 4.2 **Proper Ground Point** – A place for connecting the ground end of a temporary safety ground to earth (ground) potential. The following list of proper ground points are given in order of preferred use:
- 4.2.1 System neutral (If Available)
  - 4.2.2 Established grounds
  - 4.2.3 Substations
  - 4.2.4 Steel poles or towers
  - 4.2.5 Existing driven ground rod
  - 4.2.6 Anchor rods (not set in cinders, ashes, culm, or anchored in rock).
  - 4.2.7 Driven bull pins (Minimum Depth 4 feet)
- 4.3 **Temporary Safety Grounds** – A system of approved cables, clamps and attachments applied to de-energized facilities to cause the facilities to become de-energized should they accidentally become energized and remove static or induced voltage. These cables are sized to withstand the maximum fault current available under the prevailing conditions.

The specific components of a system of temporary safety grounds shall be identified as follows:

- 4.3.1 **Grounding Lead(s)** - The cable(s) connected from a proper ground point to the facilities to be grounded.

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4.3.2 Grounding Jumper(s) - The cable(s) connected between conductors of a circuit to be grounded, such as those cables connected from phase to phase or from a phase to the overhead ground (static) wire.

4.4 **Effectively Ground** – The term means intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current carrying capacity to prevent build-up of voltages which may result in undue hazard to connected equipment or persons.

4.5 **Bond** - Ground leads installed to maintain equal potential to work zone or components within a work zone in the event of accidental rise in potential.

4.6 **Grounding Saddle** – A proper device attached to non-metal structures, below the work location, for the purpose of establishing an equipotential plane for work to be done from the structure.

4.7 **Wire Size of Bonds and Grounds** – As used in these procedures, the wire size designations are defined as:

<u>Designation</u>	<u>Definition</u>
#2	No. 2 AWG. Copper Extra Flex Cable, 1666 strand, 75 MIL Neoprene jacket-PPL Cat. No. - 151990.
2/0	2/0 Copper Extra Flex Cable, 3325 strand, 90 MIL neoprene jacket-PPL Cat. No. – 152001.



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4/0                      4/0 Copper Extra Flex Cable, 5320 strand, 90 MIL neoprene  
jacket-PPL Cat. No. – 152002.

- 4.8     **De-energized** – The status or condition of lines and apparatus when not energized at normal operating voltage, and all sources of normal voltage are blocked. Lines and apparatus energized only by electrostatic or electromagnetic induction are considered de-energized for the purpose of applying temporary safety grounds.
- 4.9     **Conductors** - All phase wires and overhead ground (static) wires. When tension stringing using conductive (steel or old conductor) pulling line, it becomes necessary to work on the pulling line, it shall be considered as a conductor.
- 4.10    **Work Location Ground** – P (Personal ground) No. 2 AGW copper, extra-flex cable attached to the conductor at each location where a single conductor is being worked on.
- 4.11    **Mobile Equipment Ground** – Ground required on mobile equipment while working in close proximity to lines (overhead or underground) while energized.

**5.0     MAIN BODY**

- 5.1     All conductors and equipment shall be treated as energized until de-energized, tested, and properly grounded.
- 5.2     New lines or equipment may be considered de-energized and worked as such where:



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- 5.2.1 The lines or equipment are grounded, or,
- 5.2.2 The hazard of induced voltages is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.
- 5.3 All applicable PPL Electric Utilities Safety Rules that apply to the temporary safety grounding process shall be followed.
- 5.4 The person in charge of the job shall be responsible for:
  - 5.4.1 The selection, installation, and location of temporary safety grounds and bonds
  - 5.4.2 Documenting the location of the temporary safety grounds for the duration of the job, on the energy control process Permit/documentation form.
  - 5.4.3 Conducting and documenting a job briefing on the boundaries of the protective blocking, location of temporary safety grounds and all applicable safety rules.
- 5.5 The authorized worker shall be responsible for:
  - 5.5.1 Working within the boundaries of the blocking and temporary safety grounds.
  - 5.5.2 Inspect grounding and bonding hardware prior to and after each use.





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5.6 Minimum approach distances shall be followed, as per section 8 of the Safety Rule book until the line is de energized under the appropriate energy control process and grounded.

**5.7 Voltage Testing**

5.7.1 Before applying grounds to conductors or facilities that have been de-energized, a test for potential shall be made on the facility to be grounded using an approved potential test device.

5.7.2 Grounds shall be applied using an approved hot line tool to apply grounds on >600 volts. The potential test device must be checked before and after use to assure reliability of test.

**5.8 Application**

5.8.1 Grounds shall be placed between work location and all sources of energy as close as practicable to the work location or grounds shall be placed on both sides of the work area as close as practicable.

5.8.2 If work is to be performed by more than one crew in a line section, the line section must be grounded and short circuited at one location in the line section and the conductor to be worked on shall be grounded at each work location. Depending on the work, ground on both sides of the work area.

5.8.3 Where the making of a ground is impracticable, or that the conditions resulting from the installation of grounds would present greater hazards than working without grounds, the line and equipment may be worked as energized.



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**5.9 Method of Installing and Removing Grounds**

- 5.9.1 When attaching grounds, the ground end shall be attached first, and the conductor end shall be attached and removed by means of an approved, tested stick of sufficient length to maintain safe working clearance.

**5.10 Preparation of Grounding Surfaces**

- 5.10.1 If exposure is to fault currents associated with circuits of less than 66 kV or to induced currents, care must be exercised to assure good connections, both mechanically and electrically. Thorough cleaning of facilities before grounds are installed is essential.
- 5.10.2 Special preparations shall be made before applying grounds on corrosion-resistant steel. Where no permanent ground details exist, proper ground details shall be installed and utilized before any other work proceeds, or the corrosion-resistant surface shall be completely removed at points of ground set connection.
- 5.10.3 If exposure is to fault currents associated with circuits of 66 kV or greater, care must be exercised to assure a good mechanical connection, using line-type clamps on rounded surfaces (conductors, ground details, ground pins, etc.)
- 5.10.4 Applying flat-face clamps or line-type clamps directly to flat grounding surfaces – tower steel, substation structures, etc. – is not permitted. Proper 'C' type clamps with a round ground detail shall be applied to these flat surfaces.

**5.11 Sequence of Installing Temporary Safety Grounds**



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5.11.1 The grounding lead shall be securely attached to a proper ground point before attaching the other end to the conductor being grounded.

5.11.2 Ground the conductor closest to the worker first and then move toward the furthest conductor.

5.11.3 A grounding jumper shall be securely attached to a grounded conductor before attaching the other end to the conductor being grounded.

**5.12 Applying Grounds on Non-Metal Structures for Work to be Done from the Structure**

5.12.1 The grounding lead shall be attached from a proper ground point to a proper grounding saddle. A grounding jumper shall be attached from the grounding saddle to the first phase being grounded. Next ground end attached to the grounded phase and the other end to the next closest phase. Use same method to ground last phase. Attach ground lead from grounding point to closet phase. Clamp one end of the next ground set to the grounded phase and the second end to the next closest phase. Ground the last phase using the same method.

5.12.2 When applying ground-end clamps to proper ground points, an adequate, safe connection is established when clamps are applied tightly by hand (a torque of 10-15 ft. lbs.). It is not necessary to exert additional torque, such as through the use of a wrench or other tool.

**5.13 Method of Installing Bonds**

5.13.1 Bonds may be applied to lines or facilities only after grounds have been applied.



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5.13.2 Care must be exercised to assure that good electrical connections are achieved at all points where bonds are attached. Thorough cleaning of facilities before bonds are installed is essential. Special preparations shall be made before applying bonds on corrosion-resistant steel. Where no permanent ground details exist, the corrosion-resistant surface shall be completely removed at points of connection.

5.13.3 An approved stick of sufficient length to maintain working clearance shall be used when applying or removing bonds.

**5.14 Equipment Grounds**

**5.14.1 In a Substation**

5.14.1.1 Minimum 4/0 Grounds required

5.14.1.2 Any vehicle or mobile equipment actively engaged in work, shall be grounded to a proper ground point connected to the substation ground grid,

5.14.1.3 All mobile equipment shall be grounded within substations.

**Exception:**

Mobile equipment when transported (driven, hauled, or moved) into or out of a substation or to and from work locations within the substation.

**5.14.2 Outside the Substation**

5.14.2.1 Minimum size of grounds is 2/0 up to 23 kV and 4/0 for all voltages above 23 kV.

5.14.2.2 When operating mobile metal equipment, the equipment shall be grounded to a proper ground point when one or more of the following conditions exist:

5.14.2.2.1 Contact with an energized overhead or underground facility is possible.

5.14.2.2.2 Such equipment is within 100 feet of the centerline(s) of circuits energized at 69 kV or above.



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**5.15 Lines that have been De-energized to Permit Maintenance, Repairs, or Reconstruction**

- 5.15.1 All phase(s) shall be short-circuited and grounded for protection against the line being re-energized. If the job includes work on the overhead ground wire, it shall be grounded at the same location(s). Phase-to-phase grounding jumpers shall be 4/0; others may be 2/0. (Phase-to-ground connections for transmission structures must be 4/0)
- 5.15.2 The line may be grounded at the work location, using one (1) set of grounds when:
- a) The work location involves only one structure, and
  - b) The work to be performed at that location does not involve breaking the continuity of any of the conductors being worked on.
- 5.15.3 Grounds shall be installed as close to the work location as possible and between the work location and all points from which the line might be re-energized, or work must be performed with grounds installed on both sides of the work area when:
- a) Work location includes work to be performed at several structures in a section of line, or
  - b) Work to be performed requires breaking the continuity of one or more of the line conductors, such as when doing maintenance on an air break switch or disconnecting loops, or repairing a downed conductor.



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5.15.4 If work is to be performed at more than one location in a line section:

- a) The line section must be grounded and short circuited at one location in the line section, and
- b) The conductor to be worked on shall be grounded at each work location. When breaking continuity, apply grounds on both sides of the work area.

5.15.5 When work requires disconnecting conductors from a structure supporting a span over an energized crossing of 600 volts or above, a ground shall be maintained between the crossing and the work location on the conductor(s) being worked on. If the line is being crossed is energized below 23 kV, use 2/0 grounds; if greater than 23 kV, use 4/0 grounds.

5.15.6 A non-insulated aerial device supporting employees shall be bonded to the conductor being worked on using #2 cable.

5.15.7 When line(s) energized at 66 kV or above are running parallel to and within 100 feet (measured between the near phases of the parallel lines) of the line being worked on:

- a) Assure the maximum distance between grounds is two miles.
- b) When connecting or disconnecting loops, or splicing a conductor, a minimum #2 bond shall be applied to the conductor ends to maintain continuity throughout the procedure. Where grounds that are connected to a common proper ground point are applied to the conductor on both sides of the point of connection, no additional bond is required.



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**NOTE: This bond must be maintained while splicing at ground level.**

**5.16 Lines Under Construction**

- 5.16.1 With no line energized at 66 kV or above running parallel to and within 100 feet (measured between the near phases of the parallel lines) of the line being worked on and there are no crossings of 600 volts or above, a minimum #2 temporary safety ground shall be applied.
- 5.16.2 When stringing, sagging or removing wire over energized crossings of 600 volts and above
- a) Energy Control Process, Operating Instruction 153 shall be observed.
  - b) A proper grounded stringing block or traveling ground shall be installed on the crossing structure on one side of each crossing except that at the first crossing encountered in each pull, the ground shall be applied at the structure on the "pay-out" side of the crossing. Each block or traveling ground shall be grounded to a proper ground point using: 2/0 cable if the line being crossed is energized below 23 kV; 4/0 cable if the line being crossed is energized above 23 kV.
- 5.16.3 Pulling equipment (cable reel trailers, tensioners, etc.) shall be grounded using proper size ground for the voltage to a proper ground point. If an attendant is required, he shall stand on a proper metal grid, which is bonded to the trailer using #2 cable or attendant shall wear class 2 rubber gloves and overshoes.
- 5.16.4 When tension stringing using conductive (steel or old conductor) pulling line; the puller shall be grounded to a proper ground point using the proper size



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ground for the voltage, and a proper grounded stringing block or traveling ground shall be applied on the puller side of the last crossing. If an attendant is required, he shall stand on a proper metal grid, bonded to the equipment using minimum #2 cable, or wear class 2 rubber gloves and overshoes.

- 5.16.5 When clipping in or out , #2 temporary safety ground shall be applied to the conductor at the first and last structures in the line section, provided there are no crossings 600 volts or above in the first or last span. These grounds shall remain intact until the conductor is clipped in, except on dead-end structures, or placed in running blocks.
- 5.16.6 De-energized crossing of 600 volts and above can be worked as though no crossing existed, provided the de-energized line being crossed is properly grounded on both sides of the crossing.
- 5.16.7 With line(s) energized at 66 kV or above running parallel to and within 100 feet (measured between the near phases of the parallel lines) of the line being worked on:
- a) A structure or aerial device supporting employees shall be bonded to the conductor being worked on using #2 cable.
  - b) When working on bundled conductors, the sub conductors shall be bonded together using #2 cable.

## **6.0 REFERENCES**

- 6.1 [DDI L-306 Temporary Safety Grounding](#)





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6.2 PPL EU Safety Rule Book Section 8

**7.0 REGULATORY REQUIREMENTS**

7.1 [29 CFR OSHA 1910.269 Electric Power Generation, Transmission, and Distribution](#)

**8.0 TRAINING/SAFETY**


8.1 PPL EU Safety Rule Book

**9.0 COMPLIANCE AND EXCEPTIONS**

9.1 Not Applicable

**10.0 ATTACHMENTS**

10.1 [DDI L-306 - Temp Safety Grounding of T & D Overhead Lines, UG, LTN, Subs., and Vehs / Equipment](#)

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## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.2.1
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	02	Date	3/22/2021	Effective	3/26/2021
Prepared by:		Jared Dyer, Project Manager – Health and Safety			
Reviewed by:		Dalton Shorts, Sr. Safety Professional; Brian Kostik, Project Manager – Health and Safety; Tyler Honor, Safety Professional			
Approved by:		Chuck Wood, Manager-Safety Operations			
Revision Comments:		Clarified vehicle and equipment grounding requirements inside a substation (section 5.14)			

Rev	01	Date	7/13/2017	Effective	7/13/2017
Prepared by:		Steve Mondschein, Safety Specialist			
Reviewed by:		Safety Professionals: Jared Dyer, Debbie Sweinhart, Dalton Shorts, Brian Kostik, Elizabeth McKay			

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<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations
<b>Revision Comments:</b>	Added requirement for 4/0 grounds for phase-to-ground connections for transmission structures (section 5.15.1). This was done to align with the requirements of DDI L-306 Temporary Safety Grounding. Removed attachment and figures to eliminate confusion between DDI L-306.

<b>Rev</b>	00	<b>Date</b>	07/20/2012	<b>Effective</b>	07/20/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, and Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety			

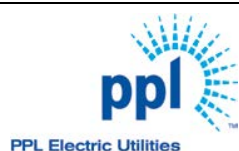


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### 1.0 PURPOSE/SCOPE

- 1.1 The purpose of this procedure is to provide protection for personnel, through control of unexpected energized start up or release of hazardous **Energy Sources**, when working internal or external to the company-owned facilities.

This procedure applies to:

- 1.1.1 All employees performing service and maintenance on any systems or equipment in all facilities not addressed in Transmission and Distribution Operating Instruction 153.
- 1.1.2 Contractors working on PPL facilities, outside of the three instructions above.

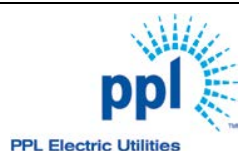
- 1.2 The procedure does not apply to:

- 1.2.1 Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energized startup of the equipment is controlled by the unplugging of the equipment from the Energy Source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- 1.2.2 **Qualified** employee using approved energized work methods.

- 1.3 This procedure outlines the need for affected departments to have a procedure developed, documented and utilized for the control of potentially hazardous energy (HECP) when employees are engaged in the activities requiring the control of energy sources.

OSHA exceptions: The employer need not document the required procedure for a particular machine or equipment, when **all** of the following elements exist:

- (1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
- (2) the machine or equipment has a single energy source which can be readily identified and isolated;
- (3) the isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment;
- (4) the machine or equipment is isolated from that energy source and locked out during servicing or maintenance;
- (5) a single lockout device will achieve a locked-out condition;
- (6) the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;
- (7) the servicing or maintenance does not create hazards for other employees; and



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- (8) the employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance

## 2.0 RESPONSIBILITIES

### 2.1 Departmental management is responsible to:

#### 2.1.1 Determine which equipment requires equipment-specific hazardous energy control procedures (HECP).

##### 2.1.1.1 Develop the HECP when required.

#### 2.1.2 Assure Authorized Workers are trained and designated, and that re-training is conducted whenever:

- a) There is a change in this procedure.
- b) The periodic inspections and/or incident investigations reveal a deviation or inadequacy in the application or knowledge on the part of the Authorized Worker(s).

#### 2.1.3 When contracted personnel are working for PPL Electric Utilities and their policies require them to implement their own Energy Control Procedure, the departmental management administering the contract shall ensure that the Energy Control Procedure(s) are coordinated and that each employer ensures that their personnel understand and comply with the restrictions and prohibitions of the Energy Control Procedure(s) being used. When it is desired, the contractors implement their Energy Control Process within the protection and coordination of this procedure; this includes considering if a PPL Electric Utilities employee should be designated and work as a Primary Authorized Worker for the area the contractors are implementing their procedures.

#### 2.1.4 Assure that inspections of the implementation of this procedure are performed within 12 months, as an on-going cycle.

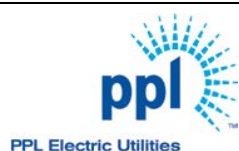
##### **Reference Appendix C**

#### 2.1.5 Initiate, and formally investigate, deviations or errors to this procedure for the purpose of identifying and communication corrective actions.

### 2.2 The Holder is responsible:

#### 2.2.1 For completion of the Lockout/Tagout Energy Control Documentation, and adherence to the requirements of this procedure.

#### 2.2.2 When employees are performing contract work in non-PPL Electric Utilities facilities, or PPL Electric Utilities owned facilities that do not follow



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this procedure, to ensure that the Energy Control Procedure(s) are coordinated with the facility owner/site host and any other contractors, and that each employer ensures that their personnel understand and comply with the restrictions and prohibitions of the Energy Control Procedure(s) being used.

2.2.3 Assurance that procedures of verification have been met for all Energy Isolation Devices.

2.2.4 The use of the proper Group Lockout/Tagout, Authorized Worker accountability process.

2.3 The Authorized Worker is responsible for:

2.3.1 Adhering to the requirements under this procedure.

2.3.2 Understanding of the system protection and adhering to the accountability process.

2.3.3 Whenever he/she is entering or leaving the work location, to notify the Holder.

2.4 Affected Employees:

2.4.1 All affected employees shall be notified of ECP work in their area.

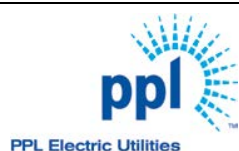
### 3.0 APPLICABILITY

3.1 This procedure is to provide protection for personnel, through control of unexpected energized start up or release of hazardous Energy Sources, when working internal or external to the company-owned facilities.

### 4.0 TERMS AND DEFINITIONS

4.1 **Additional Element** – The implementation of additional element(s) is required with the use of a tag only system for each Energy Isolation Device. This additional element shall include items such as: an additional tagged Energy Isolation Device, the removal of an isolating circuit element, temporary safety grounds on electrical systems, additional blocking of a controlling switch, opening of an extra disconnecting device, cable ties applied as a locking device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.

4.2 **Affected Worker** – A qualified employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under an Energy Control Process or whose job requires him/her to work in an area where the operation of Energy Isolation Devices impact their safety. Affected Workers are responsible for not operating any device that has



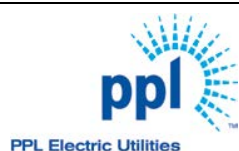
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an Energy Control Process tag attached and to understand that the tag is equivalent to a lock.

- 4.3 **Authorized Worker** – A qualified employee who has successfully completed the training requirements of the appropriate Energy Control Process in use, and who may perform maintenance/service on equipment after having demonstrated proficiency in job-related activities. This individual must also be designated as an Authorized Worker by departmental management.
- 4.4 **Danger Do Not Operate Tags**, PPL Cat. #103423 – Standard printed tags which are used for personal protection in areas under the jurisdiction of this procedure. The tags will be referred to as Danger Tags in this procedure.
- 4.5 **Energy Control Lock** – A standard, company-approved lock used specifically and only for controlling Energy Isolation Device in a “safe” position for implementation of this Lockout/Tagout Procedure.
- 4.6 **Energy Isolation Device** – A device that physically controls or prevents the transmission or release of energy. The term does not normally include a push button, selector switch, or other control circuit type devices.
- 4.7 **Energy Source** – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- 4.8 **General Industry** (Accountability Process) – Communication of the status of Group Lockout/Tagout to Authorized Workers for work performed on all non-Transmission/Distribution work environments (such as non-PPL electric generation sites, general building HVAC and lighting systems, cellular transmitter sites, weld and maintenance shops, and manufacturing systems); includes all electrical Energy Sources on the load-side of the electric distribution meter.
- 4.9 **Group Lockout/Tagout** – When more than one Authorized Worker is being protected by a single Energy Control Process.
- 4.10 **HECP** - The OSHA standard for hazardous energy control procedures (HECP). (Lockout/Tagout) (29 CFR 1910.147) for general industry outlines measures for controlling different types of hazardous energy. The LOTO standard establishes the employer's responsibility to protect workers from hazardous energy.
- 4.11 **Holder** – A PPL electric Utilities employee or non-PPL Electric Utilities worker who is an Authorized Worker and is responsible for the proper application, implementation, and verification of the Energy Control Process. The Holder may, at times, be designated as a Primary Authorized Worker or a Principal Authorized Worker.
- 4.12 **Periodic Inspection** – An annual, documented, inspection of the Lockout/Tagout Procedure performed within 12 months of the previous inspection, for the purpose of ensuring that the requirements of this procedure are being adhered





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to. Documentation of the inspection shall be retained until the next inspection.

- 4.13 **Primary Authorized Worker** – A qualified employee who is an Authorized Worker, and is responsible for the overall Energy Control Process of the energy systems for a single “site” or facility.
- 4.14 **Principal Authorized Worker** – A qualified employee who is a holder and is responsible to the Primary Authorized Worker for the Energy Control Process protection and accountability of other Authorized Workers performing maintenance/service on equipment under a Group Lockout/Tagout.
- 4.15 **Qualified employee** (Qualified Electrical Worker) – Is a person who: a) is trained to work on or within the Minimum Approach Distance of exposed, uninsulated, unguarded, energized electrical equipment and b) is knowledgeable of the construction, operation, and associated hazards of the electrical equipment.  
  
Note: On a task basis, an employee is either qualified or unqualified depending on the individual's training and/or work experience. For example, it is possible to be qualified with all the electrical equipment in a particular work area, and yet unqualified with a new piece of equipment.
- 4.16 **Lockout/Tagout Energy Control Documentation Form #4868**– A form used to document information pertaining to this procedure implementation.
- 4.17 **Transmission/Distribution** (Accountability Process) – Communication on the status of Group Lockout/Tagout for work performed on the electric transmission, distribution, and substation system starting at the load side disconnect of the generation step-up transformer to, and including, the distribution metering system.

## 5.0 MAIN BODY

- 5.1 REQUIREMENTS OF USE FOR THE DANGER TAG AND ENERGY CONTROL LOCK
  - 5.1.1 The Danger Tags, and Energy Control Locks are to only be used for protection of personnel, as per this procedure.
  - 5.1.2 Danger Tags are, by themselves, warning devices and do not provide a physical restraint, but shall be considered the equivalent of locks.
  - 5.1.3 An Energy Isolation Device shall not be moved or operated with a Danger Tag or an Energy Control Lock applied.
  - 5.1.4 Danger Tags shall be affixed in such a manner as will clearly indicate that the operation or movement of an Energy Isolation Device from the safe position is prohibited.



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- 5.1.5 Energy Control Locks shall be placed to physically prevent operation or movement of the Energy Isolation Device.
- 5.1.6 Only the approved Danger Tags and Energy Control Locks shall be used for implementing this procedure, and shall be used for no other purpose.
- 5.1.7 More than (1) one Danger Tag or Energy Control Lock can be placed on a single Energy Isolation Device when multiple Holders need to implement this procedure.
- 5.1.8 An Additional Element shall be used when a Danger Tag (and no lock) is used on a single Energy Isolation Device. The Additional Element shall be maintained until the last Authorized Worker is clear of the Lockout/Tagout protection.
  - a) If a Holder is going to use another Holder's Additional Element, he/she shall place a Danger Tag on it and shall notify the original Holder who placed that additional element.
  - b) A Danger Tag may be placed on a "common" lock as an Energy Isolation Device, and the "common" lock will serve as the Additional Element in this situation.
- 5.1.9 The Danger Tag shall be attached at the same point where a lock, if applicable, would have been attached. Where a Danger Tag cannot be affixed directly to the Energy Isolation Device, the Danger Tag shall be located as close as possible to the Energy Isolation Device in a position that will be immediately obvious to anyone attempting to operate the device.
- 5.1.10 The Danger Tag shall be attached by means of a non-reusable type attachment, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and shall have the characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- 5.1.11 Danger Tags and Energy Control Locks may be used interchangeably. (NOTE: The Additional Element shall be used whenever a Danger Tag is used alone.)

## **5.2 IMPLEMENTATION**

- 5.2.1 Implementation of this procedure shall be accomplished with one of the three options below:
  - a) Each Authorized Worker performing service or maintenance on the equipment shall implement this procedure for him/herself as an individual Holder.
  - b) Group Lockout/Tagout is used.



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- A Holder is established, and is responsible for the implementation of this procedure and the accountability process for the Authorized Worker(s) being protected by the Group Lockout/Tagout.
- For situations involving this procedure in electric generation or General Industry Site, the General Industry Accountability Process of Appendix A, I and Appendix B shall be used.
- For situations involving this procedure in a Transmission/Distribution/Substation environment, the Transmission/Distribution Accountability Process of Appendix A, II and Appendix B shall be used.

5.2.2 A PPL Electric Utilities employee functions as a Primary Authorized Worker for Holder(s), who are Principal Authorized Worker(s). In this situation, the PPL Electric Utilities Primary Authorized Worker implements this procedure for overall control of the Energy Sources and the Holder(s). The Holder(s), as Principal Authorized Workers, implement the Energy Control Process within the protection controlled and coordinated by the PPL Electric Utilities Primary Authorized Worker.

- a) It may be desirable to have a Primary Authorized Worker maintain overall control and coordination when multiple Holders are going to be working on the same project, or when contractors require implementing their own Energy Control Process within a PPL facility. This needs to be considered and determined in the pre-job plan by the PPL employee in charge of the job.

### **5.3 APPLICATION (GENERAL)**

- 5.3.1 The Holder shall identify all devices and blocking points that will be used as Energy Isolation Devices to provide protection and plans for the use of Danger Tag(s), Energy Control Lock(s), or a combination of both.
- 5.3.2 The Holder assigns a control number to each Danger Tag or Energy Control Lock issued, and enters this information on the Lockout/Tagout Energy Control Authorization Form. Each Danger Tag and Energy Control Lock used is listed on the Lockout/Tagout Energy Control Authorization Form. The control number shall be the Holder's identification number followed by the consecutive number of the Tag/Lock (i.e.: 098989-01, 098989-02, etc.), or a permanent serial number on an Energy Control Lock. This numbering system is maintained for as long as the Danger Tag or Energy Control Lock is in use. No two Danger Tags or Energy Control Locks using the same control number may be in use at the same time.
- 5.3.3 All information required on the Danger Tag shall be filled out completely by the Holder or their directed Authorized Worker designee.



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- 5.3.4 The Holder, or directed Authorized Worker designee, is responsible to assure placement of switches, disconnects, jumpers, taps, breakers, valves, leads, or other operating devices in a safe condition (open or closed) to prevent injury to workers performing work on a system, and placement of the Danger Tag(s) or Energy Control Lock(s).
- 5.3.5 The Holder is responsible for, and shall verify, the status of each Energy Isolation Device and Danger Tag/Energy Control Lock application.
- a) For Transmission & Distribution systems, verification shall be accomplished through observation of Energy Isolation Devices, testing for potential, and use of temporary safety grounds. If an Authorized Worker designee applied a Danger Tag/Energy Control Lock, verification shall be conducted through communication by the Holder with the Authorized Worker who positioned the Energy Isolation Device and applied the Danger Tag/Energy Control Lock. Final verification shall be conducted by the Authorized Workers who will work on the system, by testing for potential, affirming none is present, and applying temporary safety grounds as applicable.
  - b) For all other Energy Source(s) associated with General Industry sites, the Holder shall inspect and verify each Danger Tag/Energy Control Lock, and the status of each Energy Isolation Device.
  - c) The Holder completes all information requirements of the Lockout/Tagout Energy Control Authorization Form.
- 5.3.6 The Holder shall ensure that the equipment is tested to verify it is de-energized and all stored/residual energy released.
- a) For electrical circuits and parts of equipment, proper test equipment shall be used to test for potential to assure de-energization.
- 5.3.7 The Additional Element(s) in use shall be documented on the Lockout/Tagout Energy Control Authorization Form.
- 5.3.8 The Holder shall facilitate a formal "tailboard" with the Authorized Worker(s) protected in a Group Lockout/Tagout, prior to initiating the Group Lockout/Tagout, and inform them of the limits of the protection, the accountability process in use, the work that would affect the Lockout/Tagout Procedure, and any applicable coordination with other Energy Control Procedures being used.
- 5.3.9 For a Group Lockout/Tagout, the Holder shall assure the accountability process, as applicable to either the General Industry or Transmission/Distribution work environment (see Appendices A and B), is properly completed for initial acceptance, any change of status, and final release from of the protection of the Group Lockout/Tagout.



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No Authorized Workers may commence work until they complete the appropriate accountability process, and no change shall be allowed to occur until each Authorized Worker being protected understands the change and has completed the accountability confirmation. Change of status includes:

- a) removal of Danger Tags/Energy Control Locks for testing, and re-application after testing
- b) any changes in the Additional Element(s)
- c) changes in the Energy Isolation Device(s)
- d) release from the Group Lockout/Tagout, or when an Authorized Worker(s) is no longer required to be protected by the Group Lockout/Tagout
- e) a different Authorized Worker becomes the Holder (transfer of Group Lockout/Tagout)

5.3.10 The Holder shall assure all Affected Workers are informed of when the Lockout/Tagout Procedure is in place and when the Lockout/Tagout procedure is released.

5.3.11 Shift changes, or a lapse of continuity of the work of more than one shift: When the Holder (and if applicable, Group Lockout/Tagout, Authorized Workers) leave the job and return to the job for another shift, the Holder shall verify the status of the Energy Isolation Devices affecting the work prior to commencing any work within the protection afforded by the Lockout/Tagout procedure.

- a) For Group Lockout/Tagout, the Holder shall communicate the verification of the Energy Isolation Devices and continuation of the Group Lockout/Tagout to the Authorized Worker(s) at a formal tailboard, prior to commencing the work. This tailboard communication shall be properly documented.

5.3.12 Then system/equipment testing needs to occur:

- a) For an individual Holder performing the work alone, he/she shall remove his/her own Additional Element(s) and Danger Tag(s)/Energy Control Lock(s) from the equipment prior to operating the Energy Isolation Device(s) for test. After testing is completed he/she shall reapply the Additional Element(s) and Danger Tag, or Energy Control Lock(s).
- b) For a Group Lockout/Tagout, the Holder shall assure that:



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- Authorized Workers have been informed of the test, are clear of the equipment, and the Holder has implemented the proper accountability process (see Appendices A and B) for the communication and change
- The Additional Element(s) have been removed
- The Danger Tag(s)/Energy Control Lock(s) on the Energy Isolation Device(s) have been removed
- After testing, in order to continue work under the procedure, the same sequence is used in reverse order to re-instate the Group Lockout/Tagout

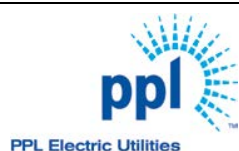
5.3.13 If the Holder who applied the Danger Tag(s)/Energy Control Lock(s) is not available to remove them, the Danger Tag(s)/Energy Control Lock(s) may be removed by their immediate supervisor or another designated Holder. This supervisor or designated Holder assumes all responsibility of the original Holder for implementing this procedure.

- a) The immediate supervisor or other designated Holder shall verify that the original Holder is not present at the site and, if a Group Lockout/Tagout was used, assure proper completion of accountability for all Authorized Workers (see Appendices A and B). This person shall notify the original Holder of any changes, prior to him/her resuming work at the site.

5.3.14 When there is a change of Holders (transfer of responsibility for procedure implementation to a different Holder):

- a) The “original” Holder shall review the Energy Isolation Devices with the “new” Holder, and the “new” Holder shall properly verify the status of each Energy Isolation Device and Danger Tag/Energy Control Lock placement, as applicable to the General Industry or Transmission/Distribution work environments.
- b) The “new” Holder shall update the Lockout/Tagout Energy Control Authorization Form:
- The “original” Holder’s name is lined-out, and the “new” Holder’s name written in the blank.
  - In the “HOLDER” block the term “Holder transfer”, the time and date of the transfer is written and initialed by the “new” Holder.
- c) For Group Lockout/Tagout accountability process:
- The “original” Holder will complete and finalize his/her accountability documentation process.





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- The “new” Holder will initiate a new accountability documentation form for the Authorized Worker(s) being protected (see Appendices A and B).

5.3.15 When a PPL Electric Utilities employee is serving as a Primary Authorized Worker in order to provide overall control/coordination of the Energy Sources for Holders, the PPL Electric Utilities Primary Authorized Worker shall follow the requirements of this procedure and the Group Lockout/Tagout accountability process for the Holder(s) who are Principal Authorized Worker(s).

This PPL Electric Utilities Primary Authorized Worker is also responsible for overall coordination of all contractors' implemented Energy Control Processes on that job site, and to assure each contractor understands the prohibitions and limits of each Energy Control Process in use. This coordination required includes contractor's actions of:

- a) Release of their energy control process.
- b) Testing or operation of Energy Isolation Devices.
- c) Application of foreign Energy Sources.
- d) Transfer of Holder.
- e) This also includes coordinating a job specific communication system to contact multiple Holders.

5.3.16 All Danger Tags and Lockout/Tagout Energy Control Authorization Forms shall be filed at a departmental centralized location and retained for a minimum of one year.

## 5.4 PERIODIC REVIEW OF PROCESS

5.4.1 Departmental management shall determine, through regular supervision and inspections conducted within every 12-month period, that there is adherence to the requirements of this procedure. These inspections/reviews shall be documented. The review must include an assessment of the step-by-step process of an actual job and must be conducted by a person who has been trained in the process.

**Reference Appendix C**

## 5.5 NON-PPL PERSONNEL/CONTRACTORS

5.5.1 Whenever outside servicing personnel are to be engaged in activities covered by this procedure within PPL Electric Utilities facilities, they shall adhere to this procedure.



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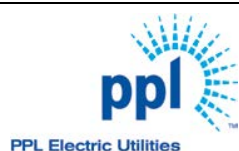
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- 5.5.2 Non-PPL Electric Utilities workers are not considered Authorized Workers for this procedure until properly trained in the procedure, and all non-PPL Electric Utilities workers who fit the definition of Affected Worker shall be trained as such. The employee administering the contract is responsible to assure this is completed.
- 5.5.3 PPL Electric Utilities departments retain jurisdiction over all non-PPL Electric Utilities personnel implementing this procedure.
- 5.6 PPL Electric Utilities EMPLOYEES IMPLEMENTING THE LOCKOUT/TAGOUT PROCEDURE IN NON-PPL Electric Utilities FACILITIES, OR PPL Electric Utilities -OWNED FACILITIES IN WHICH THIS PROCEDURE DOES NOT APPLY
  - 5.6.1 The PPL Electric Utilities employee in charge of the job shall contact the resident facility host, inform the responsible individual of the PPL Electric Utilities Lockout/Tagout Procedure, and mutually agree to provisions of Energy Control. The PPL Electric Utilities Holder is responsible to completely implement this procedure in these situations, unless the provision below is implemented.
  - 5.6.2 If the facility owner requires the PPL Electric Utilities employees to use that facility's Energy Control Procedure (such as when PPL Electric Utilities employees perform work as a contractor):
    - a) The other Energy Control System must be evaluated by a competent PPL Electric Utilities person to assure OSHA regulations are met; and the host facility procedure must contain the appropriate elements of this Lockout/Tagout Procedure.
    - b) The PPL Electric Utilities employees serving as Holders, Authorized Workers, or Affected Workers shall be appropriately trained in the other Energy Control Process.
  - 5.6.3 The Holder shall communicate to the Authorized Worker(s) and Affected Worker(s) within their jurisdiction, the provisions of the Energy Control System that will be used and/or any other Energy Control Systems in use.
  - 5.6.4 When working within a single facility or site, it is recommended that the Holder facilitate a single administrative log system to identify other Energy Control Procedures in use.

## **6.0 REFERENCES**

- 6.1 Facilities Management SP 01 – Lockout/Tagout for Facilities
- 6.2 PPL Electric Utilities Safety Rule Book





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### **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA 29CFR 1910.147 – [The Control of Hazardous Energy \(Lockout/Tagout\)](#)
- 7.2 OSHA 29CFR 1910.269 – [Electric Power Generation, Transmission, and Distribution](#)

### **8.0 TRAINING/SAFETY**

- 8.1 Each Authorized Worker shall be qualified through successful completion of the training requirements of the PPL Electric Utilities Lockout/Tagout Procedure.
- 8.2 Records shall be maintained to verify that training has been accomplished. The record shall contain each employee's signature and date of training.
- 8.3 Retraining will be conducted when deficiencies are found, or when changes are made to this procedure, or when deficiencies are identified during the periodic inspections.
- 8.4 Facilities Management ECP Supervisors/Holders/Authorized:
  - 8.4.1 Any PPL Employee directly involved with the FM ECP shall be trained on the requirements of this procedure prior to starting work involving the lockout of equipment. (MST 647)
  - 8.4.2 Any PPL Employee shall demonstrate, through a Job Performance Measure (JPM), proficiency in the Lock-out/Tag-out process. (MST 648)
  - 8.4.3 A refresher course shall be completed annually. (MST 649)

### **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

### **10.0 ATTACHMENTS**

- 10.1 Attachment A - Accountability Process (including Group Lockout/Tagout Accountability Form – Link: [Form 4868](#)).



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### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	5/26/2017	Effective	5/26/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		<ul style="list-style-type: none"> <li>• Changed definition for affected, authorized, primary authorized and principal authorized worker from: PPL Electric Utilities employee, or non-PPL Electric Utilities worker – to - <i>a qualified employee</i>. This aligns with the PPL Safety Rule Book and Operating Instruction 153.</li> <li>• Included training reference for PPL Facilities Management.</li> <li>• Included the need for affected departments to have a procedure developed, documented and utilized for the control of potentially hazardous energy (HECP) when employees are engaged in the activities requiring the control of energy sources (except for the OSHA exceptions).</li> </ul>			

Rev	00	Date	06/26/12	Effective	06/26/12
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		General Safety Procedure converted to PPL EU Safety Procedure			



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### **ATTACHMENT A**

#### **I. GENERAL INDUSTRY APPLICATION:**

1. The Holder, for a specific Group Lockout/Tagout, will initiate the Group Lockout/Tagout Accountability Form – Link: ([Form 4868](#))
2. The Holder will apply the appropriate code for implementing the Group Lockout/Tagout, for any change of status throughout the job, and for release of Authorized Worker(s) from the Group Lockout/Tagout.
3. The Holder will have each Authorized Worker, who is working under the protection of the Group Lockout/Tagout, sign their name, enter the personal identification number, and initial and write the time he/she acknowledges each change of status code.
  - For PPL Electric Utilities employees the PIN will be the employee number. For PPL Electric Utilities contractors, the PIN shall be the contractor number, or their initials and any unique four-digit number they provide.
4. The Holder will maintain the Accountability Form for the duration of his authority as the Primary Authorized Employee for the specific Group Lockout/Tagout, and file with the PPL Electric Utilities Danger Tag Authorization Log at the end of the Group Lockout/Tagout.
5. When an Authorized Worker leaves the protection of the Group Lockout/Tagout, the Primary Authorized Worker shall assure that the Authorized Worker signs his/her signature and personal identification number on the Accountability Form. If the Authorized Worker is not present at the facility, the Holder shall make all reasonable efforts to contact the Authorized Worker to inform him/her of the intended change of status. If the Holder cannot make direct verbal communication to inform the Authorized Worker of the change, the Holder is responsible to:
  - a) Assure that the Authorized Worker is not present.
  - b) Document such on the Accountability Form, and then may make the Group Lockout/Tagout change.
  - c) Assure that the Authorized Worker is notified of the change prior to that worker resuming work.
6. Additional Accountability Forms shall be used, as necessary, to continue the accountability process for the duration of the Group Lockout/Tagout.




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### **II. TRANSMISSION/DISTRIBUTION APPLICATION**

1. The Holder, for a specific Group Lockout/Tagout, will initiate the Group Lockout/Tagout Accountability Form – Link: ([Form 4868](#)).
2. The Holder will apply the appropriate code for implementing the Group Lockout/Tagout, for any change of status throughout the job, and for release of Authorized Workers from the Group Lockout/Tagout.
3. The Holder will verbally communicate (i.e. face-to-face, radio, phone) the implementation, change of status, and intended release of Group Lockout/Tagout with each Authorized Worker who is working under the protection of the Group Lockout/Tagout. The Holder will write the Authorized Employees names and personal identification numbers and change of status code, and will write the time the Authorized Worker verbally acknowledges each change of status.
  - For PPL employees the PIN will be the employee number. For PPL Electric Utilities contractors, the PIN shall be the contractor number, or their initials and any unique four-digit number they provide.
4. The communication by the Holder will be to each Authorized Worker using their name and personal identification number, and the Authorized Worker must verbally acknowledge the change of status confirmation using their name and personal identification number.
  - In the situation of a remote “sub-crew,” the person-in-charge of the sub-crew may relay the communication of the Authorized Workers in the sub-crew to the Primary Authorized Employee, using the name(s) and personal identification number(s).
5. The Holder will maintain the Accountability Form for the duration of his authority as the primary authorized employee for the specific Group Lockout/Tagout, and file with the PPL Electric Utilities Danger Tag Authorization Log at the end of the Group Lockout/Tagout.
6. When an Authorized Worker leaves the protection of the Group Lockout/Tagout, Holder shall assure that he/she communicates with the Authorized Worker and fills out the his/her signature and personal identification number on the Accountability Form. If the Authorized Worker is not present at the facility, the Holder shall make all reasonable efforts to contact the Authorized Worker to inform him/her of the intended change of status. If Holder cannot make direct verbal communication to inform the Authorized Worker of the change, the Primary Authorized Worker is responsible to:
  - a) Assure that the Authorized Worker is not present.
  - b) Document such on the Accountability Form, and then may make the Group Lockout/Tagout change.
  - c) Assure that the Authorized Worker is notified of the change prior to that worker resuming work.
7. Additional Accountability Forms shall be used, as necessary, to continue the accountability process for the duration of the Group Lockout/Tagout.

	<p align="center"><b>SP 07</b>  <b>SAFETY PROCEDURE</b>  <b>PROTECTIVE PERMIT &amp; TAG SYSTEM</b>  <b>ANNUAL AUDITING PROCEDURE</b></p>	<p>0000-000-PR-8056                  Custom ID: SP 07                  Revision: 02                  Effective Date: 08/01/2018                  Page 1 of 19</p>
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## **1.0 PURPOSE/SCOPE**

- 1.1** To meet Regulatory audit requirements for work performed in the PPL Electric Utilities (EU) field by implementing monthly audits of the Protective Permit and Tag System. The audits shall ensure the Protective Permit and Tag System is used properly for the protection of anyone working within the Transmission & Distribution system.
- 1.2** Field Auditors (Foremen, Supervisors, Field Managers and System Operations, including Transmission Control and Distribution Control) shall review one permit and associated tags and paperwork per month in each area of responsibility, and then enter findings into the Corporate Corrective Action Tracking System (CCATS).
- 1.3** Health and Safety Auditors shall evaluate these monthly audits to ensure compliance to all OSHA regulations and PPL procedures and policies regarding the proper documentation associated with the Protective Permit and Tag System.

## **2.0 RESPONSIBILITY**

- 2.1** Foremen – Transmission Control and Distribution Control
  - 2.1.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
  - 2.1.2** Ensure during the calendar year that permits are reviewed from each of their respective areas of responsibility.
  - 2.1.3** Document their review findings in the Corporate Corrective Action Tracking System (CCATS) monthly.
- 2.2** Regional Field Managers – Transmission Control and Distribution Control
  - 2.2.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
  - 2.2.2** Ensure during the calendar year that permits are reviewed from each of their respective areas of responsibility, including:
    - a. Transmission and Distribution
    - b. Mechanical and Electrical
    - c. Substations
    - d. Underground Electrical
    - e. Low Tension Network (LTN)
  - 2.2.3** Document their review findings in CCATS monthly.



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**2.3 Construction Supervisors**

- 2.3.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
- 2.3.2** Ensure during the calendar year that permits are reviewed from their respective areas of responsibility.
- 2.3.3** Document their review findings in CCATS or Csafty monthly.

**2.4 Construction Field Managers**

- 2.4.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
- 2.4.2** Ensure during the calendar year that permits are reviewed from each of their respective areas of responsibility, including:
  - a. Transmission and Distribution
  - f. Mechanical and Electrical
  - g. Substations
  - h. Underground Electrical
  - i. Low Tension Network (LTN)
- 2.4.3** Document their review findings in CCATS or Csafty monthly.

**2.5 Distribution Control Center (DCC) Representatives**

- 2.5.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
- 2.5.2** Ensure during the calendar year that permits are reviewed from each of their respective areas of responsibility
- 2.5.3** Document their review findings in CCATS monthly.

**2.6 Transmission Control Center (TCC) Representatives**

- 2.6.1** Randomly review one permit per month, ensuring that tags (red, green and striped), permit(s) and paperwork are documented correctly.
- 2.6.2** Ensure during the calendar year that permits are reviewed from each of their respective areas of responsibility.
- 2.6.3** Document their review findings in CCATS monthly.



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**2.7 Safety Operations Representative**

- 2.7.1** Audit the monthly reviews entered in CCATS by each Foreman, Supervisor, Field Manager, and Transmission/ Distribution Control Representatives named in this procedure.
- 2.7.2** Document their reviews and findings in CCATS.
- 2.7.3** Perform additional follow-up audits in the field, as necessary.
- 2.7.4** Evaluate electrical system events (ESE) notated in the original paperwork being audited.
- 2.7.5** Recommend changes to the permit and tag process to enhance the safety operations of all those who use the Protective Permit & Tag System.
- 2.7.6** Update this procedure, as required.

**3.0 APPLICABILITY**

- 3.1** This procedure applies to all areas within the PPL EU Transmission and Distribution system where work is performed under the supervision of a System Operations Representative (SOR), including any maintenance, repairs, rebuilds, system metering, or other work on any transmission and distribution apparatus.

**4.0 TERMS AND DEFINITIONS**

- 4.1 Authorized Worker** – A worker who has successfully completed the training requirements of the Protective Permit & Tag System and can perform work on equipment where the energy has been controlled under the Permit and Tag System. An Authorized Worker must be designated as such by PPL EU departmental management.
- 4.2 CCATS** – Corporate Corrective Action Tracking System – The electronic information system where all corrective actions are entered and tracked.
- 4.3 DCC** – Distribution Control Center
- 4.4 ESE** – Electrical System Event – An occurrence in an unintended sequence of events which results in or has potential to change the status of the PPL EU electrical system.
- 4.5 Field Auditors** – These auditors are Foremen, Supervisors, Field Managers and System Operations representatives from Transmission Control and Distribution Control who provide monthly reviews of permits and tags for auditing by the EU Health & Safety Auditor. (See Health & Safety Auditor.)
- 4.6 Field Managers** – PPL EU Management personnel who supervise Foreman and Supervisors that oversee work on the PPL EU electrical system.





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- 4.7 Foreman** – PPL EU Management personnel who supervise PPL employees performing work on the PPL EU electrical system.
- 4.8 Form 311 – Permit** – This form is completed by the System Operations Representative (SOR) before, during and after work is performed on the Transmission and Distribution system. See Attachment A.
- 4.9 Form 311A – Permit Work Sheet** – This form is completed by the Permit Holder before, during and after work is performed on the Transmission and Distribution system. See Attachment B.
- 4.10 Health & Safety Auditor** – A representative from EU Health & Safety who is responsible for auditing reviews submitted by Foremen, Supervisors, Field Managers, and System Operations representatives from Transmission Control and Distribution Control.
- 4.11 Human Resource and Payroll (HRPR)** – This database assists the auditors in verifying the Permit Holder's authority level and other required employee information for the audits.
- 4.12 Low Tension Network (LTN)** – An underground grid of interconnecting cables operating at 120 volts phase-to-ground and 208 volts phase-to-phase (120/208). The secondary grid cables are routed through duct packs and interconnected in manholes and vaults. Spot Networks are energized at 277/480 kV.
- 4.13 Mechanical and Electrical** – Pertaining to any mechanical and electrical work performed on the PPL EU electrical system.
- 4.14 Operation Maintenance System (OMS)** – A PPL EU database that Operations Maintenance uses to produce and track Work Orders for maintenance on the PPL EU Transmission and Distribution system.
- 4.15 Occupational Safety & Health Administration (OSHA)** – Congress created OSHA to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. OSHA is part of the United States Department of Labor.
- 4.16 Permit** – Document required for any Qualified Worker to perform work safely on the PPL EU electrical system.
- 4.16.1 Red Tag Permit** – If the equipment **cannot** be energized at nominal line voltage when the Stripe Tag and the additional elements of protection are lifted and the devices repositioned, the permit is considered a Red Tag Permit.
  - 4.16.2 Stripe Tag Permit** – If the equipment **can** be energized at nominal line voltage when the Stripe Tag and additional elements of protection are lifted, and the devices repositioned, the permit is considered a Stripe Tag Permit.
  - 4.16.3 Green Tag Permit** – If the equipment with a Green Tag requires closing to be blocked on the devices tripped automatically or manually **to prevent re-energizing the work area**, the permit is considered a Green Tag Permit.
- 4.17 Permit Holder** – Qualified Worker responsible for the proper application, implementation and verification of the Permit and Tag System. The Permit is issued to the Permit Holder by the System Operations Representative (SOR).



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- 4.18 Protective Permit and Tag System** – This system was created for the protection of personnel working on or near the PPL EU electrical system. The system includes metering, transmission and distribution lines to the customers' point of contact, and substations, including generating station switchyards within the jurisdiction of the System Operator Representative (SOR).
- 4.19 Qualified Worker** – A person who is trained and qualified through training and certification to hold permits on the PPL EU electrical system for the protection of workers.
- 4.20 System Operations**
- 4.20.1 Transmission Control Center (TCC)** – Controls the Transmission side of the PPL EU electrical system business (69 kV and above).
  - 4.20.2 Distribution Control Center (DCC)** – Controls the Distribution side of the PPL EU electrical system business (69 kV and below).
- 4.21 System Operations Representative (SOR)** — Authority issued to a qualified individual to exercise operating jurisdiction over defined equipment. May be a Transmission System Operator, Distribution System Operator, or Primary Authorized Worker (class 'L', 'M', 'S', or 'W' Authority). The SOR has the authority to grant written permission to a Permit Holder to work on equipment after special precautions have been taken to protect the personnel doing the work.
- 4.22 Substations** – Part of an electrical generation, transmission, and distribution system, substations transform voltage from high to low, or the reverse, or perform several other important functions. Between the generating station and consumer, electric power may flow through several substations at different voltage levels.
- 4.23 Switchman** – An authorized worker that makes switching moves to complete the application of the isolation boundary, as directed by the System Operator.
- 4.24 Tags** – Standard printed labels used to provide blocking for the protection of personnel. See Attachment C.
- 4.24.1 Red tags** – These are equivalent to “locks” to protect workers. Red Tags are attached to Energy Isolating Devices. Red Tagged devices are placed into a specific position (usually open) and CANNOT be operated (switched) after the Red Tag is attached. Red Tags can ONLY be applied or removed by the direction of the System Operating Representative (SOR) (up to and including 12 kV) or the Power System Dispatcher (69 kV and above).
  - 4.24.2 Stripe tags** – These are equivalent to “locks” to protect workers. A Stripe Tag is placed on an Energy Isolating Device that may need to be operated (switched) by the direction of the Permit Holder for equipment maintenance, testing purposes, etc.
  - 4.24.3 Green tags** – These tags are used to protect workers. The purpose of the Green Tag is to prevent automatic or manual reclosing of a device after it has tripped. Green Tags are applied to the Energy Isolating Device even though the device is still closed and providing power to the equipment. If the device is opened, the Green Tag is considered a point of blocking (because the Green Tag prevents someone from reclosing the device).
- 4.25 TCC** – Transmission Control Center

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- 4.26 TCC Steno/Clerk General** – The Transmission Control Center point-of-contact which receives the finalized paperwork for all work performed by System Operations personnel.
- 4.27 Underground Electrical** – Any part of the PPL EU electrical distribution system that supplies power through underground facilities.

## 5.0 MAIN BODY

This section is organized as follows:

- Field Auditors Locate and Audit Information on Permit Forms and Tags (Section 5.1)
- PPL EU Health & Safety Audit the Field Audits and Make Recommendations (Section 5.2)

### 5.1 Field Auditors Locate and Audit Information on Permit Forms and Tags

Field Auditors shall use the following process when performing permit and tag audits (see Appendix A for example forms):

#### 5.1.1 Verify Permit is on the appropriate and approved form.

- a. Form 311 and Form 311A (see Attachments)

#### 5.1.2 Verify that **Permit** (Form 311), **Switching Order** (Form 311), and **Stripe Tag Status** (Form 311A) sections contain the following:

- a. **Location** (where work is to be performed) coordinates correctly with **Details of Blocking/Switching** (Form 311).
- j. Permit **Number** is documented and uses correct prefix letter for region (A- Allentown T&D Operations, H-Harrisburg T&D Operations, etc.) (Form 311).
- k. **Day and Date** specifies the date the Permit was issued (Form 311).
- l. **Time** specifies the time the Permit was issued (Form 311).
- m. **Time** and **Location** of tag application and any change of device position (Form 311 under Details of Blocking/Switching).
- n. **Time** and **Location** of removal of tags and any change of device position (Form 311 under Details of Blocking/Switching and Form 311A under **Time Strip Tag was Lifted** and **Time Striped Tag was Reapplied**).
- o. **Designation Name** and/or **Grid Number** are **highlighted** or **boxed** for both initial switching and return switching (Form 311, **Location** column under Details of Blocking/Switching).
- p. **Time** and **Date** the Permit was cleared and closed (Form 311, bottom).
- q. **Location** column under Details of Blocking/Switching (Form 311) matches **Location** column, **Time Ground was Applied**, and **Time Ground was Removed** (Form 311A, top).



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- r. The permit holder's **Name, Company, Employee No.**, etc. (Form 311A under TSA Holder Info table at bottom).
- 5.1.3 Verify all applicable tags are present (PPL Striped Tag (**CAT#103063**), Red Tag (**CAT#103065**), and Green Tag (**CAT#103066**)) (see Attachments).
- 5.1.4 Verify submitted tags are correctly filled out. This includes comparing the following tag information to the corresponding information on the Permit forms (Form 311 and Form 311A):
  - a. **Clearance/Permit No.** on tag matches **Number** (Form 311)
  - s. **Date** on tag matches **Day and Date** on (Form 311)
  - t. **Equipment Tagged** on tag matches **device** listed under Details of Blocking/Switching (Form 311) and **device** listed under **Location** column for Stripe Tag Status (Form 311A)
  - u. **Location** on tag matches **Location** column under Details of Blocking/Switching (Form 311)
  - v. **Applied by** on tag matches name of **authorized switchman** who applied the blocking under Switch Order (Form 311)
- 5.1.5 Verify permit was used appropriately for work being performed.
  - a. Verify the **To Have** section on Form 311 correctly indicates the location, devices, and actions listed under **Location** and **Details of Blocking/Switching** columns.
- 5.1.6 Verify Permit Holder has proper permit authority:
  - a. In HRPR system, go the employee's assigned/attained training screen (example shown below):



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Employee ID	Category	Course Name	Start Date	End Date	Status	Action
003833	MEP	MEP - JMAN ELECT-FS-4332 LTNUG	10/03/2013	01/23/2015	Attained	Courses
002010	MST	ECP - AFFECTED EMPLOYEE	03/12/2013		Attained	Courses
003734	MST	ELECT SAFE WORK PRACTICES-EU	03/12/2013		Attained	Courses
001989	MST	ELECTRICAL SAFETY-UNQUALIFIED	03/12/2013		Attained	Courses
004504	MST	FA-CPR-AED-BBP	03/12/2013	03/27/2015	Attained	Courses
001991	MST	FACILITY EMERGENCY PLAN EC'S	07/18/2014	08/31/2015	Attained	Courses
001996	MST	FACILITY EMERGENCY PLAN EMPLOYEE	03/12/2013	08/31/2015	Attained	Courses
001999	MST	FORKLIFT	07/17/2013	07/23/2016	Attained	Courses
002974	MST	Fall Protection/Scaffold User	03/12/2013		Attained	Courses
002000	MST	HAZARD COMMUNICATION PROGRAM	12/12/2013	08/31/2015	Attained	Courses
004374	MST	Medical Record Exposure Trng	05/06/2013	06/30/2015	Attained	Courses
002011	MST	PERSONAL PROTECTIVE EQUIPMENT	03/12/2013		Attained	Courses
004114	PTG	PTAG-Permit Holder 0-69KV	06/19/2013	12/31/2015	Attained	Courses
004249	PTG	PTAG-Permit Holder 138-230KV	06/19/2013	12/31/2015	Attained	Courses
004543	SAF	Workplace Violence CBT	07/28/2014	06/30/2016	Attained	Courses
004162	STR	STR-Permit Holder	03/04/2013		Unattained	Courses
004392	TDI	610 Key Policy Review	06/04/2013		Attained	Courses
004467	TDI	ARCOS CBT	09/16/2013		Attained	Courses
004397	TDI	Instructor Classroom Training	05/30/2013		Attained	Courses

- w. The employee's permit authority shall be notated under PTAG (see screenshot above).
  - x. Refer to Form 4434 Switching/Permit Authority Request to verify the category of PTAG authority: [Form 4434](#)
- 5.1.7** Verify Operation Maintenance System (OMS) Work Order has the appropriate notations in Comments and on Form 311:
- a. The required **permits** are listed
  - y. The **equipment** involved in the work to be performed is listed (out-of-service, striped tag device, line number, etc.)
  - z. The **reason** for taking equipment out of service is specified
  - aa. The **permit application** was requested five weeks ahead of the time the work was performed
  - bb. **Work Order** on Form 311 contains the OMS order number
- 5.1.8** Open CCATS and fill out Form 5166:
- a. On the CCATS home page, click **Main Menu**.
  - b. Click PPL EU Observation Form 5166.
  - c. Enter your **Name** and click **Add New**.



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The screenshot shows the CCATS web application interface. At the top, there's a header with the CCATS logo, "Powered by IMPACTEnterprise™", and user information "userid: E176680". Navigation links include "My Home Page", "Main Menu", "My Preferences", "Help", and "Logout". The main content area is titled "Search by PPL EU Observation Form (5166) ID" and "PPL EU Observation Form (5166) Search". It contains several search criteria fields: "Region/Site/Department" (a dropdown menu set to "[ALL]"), "Name" (a text input field), "Start Date: (mm/dd/yyyy)" (a date range selector with "From" and "To" dropdowns), and "Status" (a dropdown menu set to "[ALL]"). At the bottom of the search criteria are four buttons: "Clear", "Search", "Save Search", and "Add New". The interface also features a "CORPORATE CORRECTIVE ACTION TRACKING SYSTEM" label and a PPL logo in the top right corner.



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**5.1.9** Document the following in the Form 5166 in CCATS:

- a. **Date** audit was conducted
- cc. Auditor **Name**
- dd. OMS order **number**
- ee. Date/Class/Permit issued
- ff. Permit **number**
- gg. Audit results – Include **details and notes** of findings.
- hh. Fill out sections 8A, 8B, 8C, 15A, 15B, and 15C on the form (see highlighted areas in screenshots below).

7. Checked actual device status against device position			Not Observed
8. Action is performed safely			Not Observed
9. Confirmed desired device position			Not Observed
<b>8a. Permit &amp; Tag (De-energized Work) - Overall Evaluation (Meets Expectations: 0 Improve. Opportunity: 0 Not Observed: 1)</b>			
Item / Name	Result		
1. Permit & Tag (De-energized Work)	Not Observed		
<b>8b. Permit &amp; Tag (De-energized Work) - Feedback (Positive: 0 Negative: 0 Not Observed: 2)</b>			
Item / Name	Result	Comment	
2. Permit & Tag (De-energized Work) - Comments	Not Observed		
3. Permit & Tag (De-energized Work) - Comments	Not Observed		
<b>8c. Permit &amp; Tag (De-energized Work) - Detail (Meets Expectations: 0 Improve. Opportunity: 0 Not Observed: 6)</b>			
Item / Name	Result		
4. Temporary System Alteration (TSA) properly used, if needed	Not Observed		
5. Permit documentation complete and accurate	Not Observed		
6. Equipment verified de-energized	Not Observed		
7. Grounds/Other additional elements applied / removed	Not Observed		
8. Adequate worker notifications	Not Observed		
9. System Operator contacted, when required	Not Observed		
<b>9a. Vehicle/Equipment - Overall Evaluation (Meets Expectations: 0 Improve. Opportunity: 0 Not Observed: 1)</b>			
Item / Name	Result		
1. Vehicle / Equipment	Not Observed		





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<b>15a. Permit &amp; Tag / Switching - Overall Evaluation (Meets Expectations: 0 Improve, Opportunity: 0 Not Observed: 1)</b>		
Item / Name	Result	
1. Permit & Tag / Switching	Not Observed	
<b>15b. Permit &amp; Tag / Switching - Feedback (Positive: 0 Negative: 0 Not Observed: 2)</b>		
Item / Name	Result	Comment
2. Permit & Tag / Switching - Comments	Not Observed	
3. Permit & Tag / Switching - Comments	Not Observed	
<b>15c. Permit &amp; Tag / Switching - Detail (Meets Expectations: 0 Improve, Opportunity: 0 Not Observed: 13)</b>		
Item / Name	Result	
4. Procedure/s used	Not Observed	
5. 3-part communication used	Not Observed	
6. Good questioning attitude	Not Observed	
7. OMS/TMS/DMS/map wall updated	Not Observed	
8. Place keeping adequate	Not Observed	
9. Permit documentation complete and accurate	Not Observed	
10. STOP/Time-out used when uncertain	Not Observed	
11. Self-Check/STAR during critical steps	Not Observed	
12. Situational awareness	Not Observed	

**5.1.10** Send Audit notification in CCATS to permit holder's Supervisor and Regional Field Manager for their review of the audit findings.

**5.1.11** Send permit forms and tags (see Attachments) to TCC Steno/Clerk General to be filed in accordance with PPL's Record Retention Policy.

## **5.2 PPL EU Health & Safety Audit the Field Audits and Make Recommendations**

EU Health & Safety shall use the following process when performing permit and tag audits:

**5.2.1** Perform additional follow-up audits in the field, as necessary:

- a. At the end of the year, audits are analyzed for patterns and trends.
- ii. Several more audits may be conducted that reflect similar use of equipment, personnel, time of day, etc., to see if these patterns and trends need to be further scrutinized and evaluated.
- jj. Follow-up audit information shall be entered in CCATS as previously described.

**5.2.2** Evaluate electrical system events (ESE) notated in the original paperwork being audited.

**5.2.3** Document all audits and findings in CCATS per the instructions in Section 5.1.

**5.2.4** Recommend changes to the permit and tag process to enhance safety of individuals who use the Protective Permit & Tag System.

**5.2.5** Update this Procedure, as required.





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## **6.0 REFERENCES**

- 6.1** EU Systems Operation Manual, Energy Control Process, Protective Permit and Tag System, Chapter 153
- 6.2** Safety Rule Book, Section 19
- 6.3** PPL Stripe Tag (CAT #103063)
- 6.4** PPL Red Tag (CAT #103065)
- 6.5** PPL Green Tag (CAT #103066)

## **7.0 TRAINING**

- 7.1** Training references are included below:
  - 7.1.1** MST380 – Use and Application of the Permit & Tag System
  - 7.1.2** MST380 – Energy Control Process – Transmission & Distribution – Permit & Tag System
  - 7.1.3** MSTR99 – 2013 Permit & Tag Refresher

## **8.0 REGULATORY REQUIREMENTS**

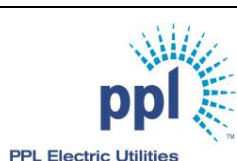
- 8.1** OSHA CFR 1910.147
- 8.2** OSHA CFR 1910.269

## **9.0 COMPLIANCE AND EXCEPTIONS**

- 9.1** All PPL EU Foremen, Supervisors, Field Managers, Transmission Control Center (TCC) representatives and Distribution Control Center (DCC) representatives shall follow this procedure.
- 9.2** Safety Operations representatives shall follow this procedure.

## **10.0 ATTACHMENTS**

- 10.1** Attachment A – [Form 311 Permit \(Switching Orders & Details of Blockings\)](#)
- 10.2** Attachment B – [Form 311A - Permit Worksheet](#)
- 10.3** Attachment C – PPL Stripe Tag (CAT #103063), PPL Red Tag (CAT #103065), and PPL Green Tag (CAT #103066)



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## 11.0 RECORD RETENTION

- 11.1** Record retention shall be consistent with the PPL Corporate Records Management Project Retention Schedule.
- 11.2** This document shall be reviewed every **two years** by the Safety Operations.
- 11.3** The review shall be facilitated by the Records Management Coordinator.

## 12.0 RECORD OF REVISIONS

Rev	02	Date	08/01/2018	Effective	08/01/201
<b>Prepared by:</b>		Jared Dyer, Supervisor - Safety Operations			
<b>Reviewed by:</b>		Jared Dyer, Supervisor – Safety Operations			
<b>Approved by:</b>		Jared Dyer, Supervisor – Safety Operations			
<b>Revision Comments:</b>		Only revision made was to include Csafety as a documentation location for the Construction Supervisors and Construction Field Managers to document their monthly Ptag inspections.			

Rev	01	Date	07/20/2017	Effective	07/20/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Dalton Shorts, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed for language changes. No changes made to the process.			

Rev	00	Date	11/06/2015	Effective	1/01/2016
<b>Prepared by:</b>		Jacque Creamer (Project Manager-Health & Safety), Jo-Ellen Darling (Technical Writer, Force Contractor)			
<b>Reviewed by:</b>		Michael Kehl (Technical Training Specialist), Shawn Cappellano-Sarver (Mgr., Distribution Operations), Paul Santarelli (Sr Mgr.-Transmission Operations), Robert Markiewicz (Mgr.-Tech Development & Communication)			
<b>Approved by:</b>		Brian Zickefoose, Mgr.-Health & Safety-EU			
<b>Revision Comments:</b>		Initial Safety Procedure for annual auditing of the Protective Permit and Tag System.			







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Attachment C: PPL Stripe Tag (CAT #103063), PPL Red Tag (CAT #103065), and PPL Green Tag (CAT #103066)

PPL STRIPE TAG	
CAT#103063  TEK ID 800-747-5250 FN 1346A	Clearance/Permit No. _____ Date _____ _____
	Equipment Tagged _____ _____
	Location _____ _____
	Applied by _____
PPL RED TAG	
CAT#103065 FN 1346A  TEK ID 800-747-5250 FN 1346A	Clearance/Permit No. _____ Date _____
	Equipment Tagged _____
	Location _____
	Applied by _____
PPL GREEN TAG	
CAT#103066  TEK ID 800-747-5250 FN 1347B	Clearance/Permit No. _____ Date _____
	Equipment Tagged _____
	Location _____
	Applied by _____

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## **SP 08 SAFETY PROCEDURE EYE PROTECTION**

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### **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of the Eye Protection Program is to assure that proper approved eye protection is worn when required by the nature of the environment in which work is being done, the work being done, or any combination of either.
- 1.2 The purpose of this instruction is to clarify those devices, which constitute minimum required eye protection, and, in the matter of personalized safety glasses, to provide guidance for the proper selection and acquisition of approved types.
- 1.3 This program shall apply to all PPL Electric Utilities employees. Visitors to areas designated as eye protection work areas shall also comply with prudent eye protection standards.

### **2.0 RESPONSIBILITY**

- 2.1 Safety Operations is responsible for assuring that departmental programs and activities are in compliance with the current company Eye Protection Program.
- 2.2 Management - Responsible for:
  - 2.2.1 Approving eye protection work areas within their jurisdiction.
  - 2.2.2 Designating the individual(s) who will be responsible for:
    - a) Identifying and defining eye protection work areas.
    - b) Ordering and distributing necessary eyeglass accessories to support the use of safety glasses (elastic holding bands, cleaning solutions, etc.).
    - c) Repairing or replacing company issued (i.e., at company expense) safety glasses or respirator insert glasses that are damaged, lost, stolen, or contaminated on the job.
    - d) Setting appropriate visitor policies for the use of safety glasses and maintaining a supply of visitor type safety glasses at locations within their jurisdiction.
- 2.3 Supervisors - Responsible for:
  - 2.3.1 Requiring employees and/or visitors under their supervision or at job sites under their direction to comply with the Eye Protection Program.
  - 2.3.2 Identifying those employees who wear prescription lenses that may, by job requirement, be required to perform work in full-face respirators, and



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arranging for them to be supplied with respirator insert glasses for use in such apparatus.

### 2.4 Employees - Responsible for:

- 2.4.1 Wearing the required ANSI approved eye protection when in designated eye protection work areas.
- 2.4.2 Obtaining and wearing specialized eye protection (e.g., face shields, goggles, etc.) for work operations as specified in the Safety Rule Book or as required by the hazard of the job.
- 2.4.3 The cost and acquisition of any personalized safety glasses (including accessories, e.g., side shields, nose pieces, etc.), including the replacement if lost, stolen, damaged, or contaminated.
- 2.4.4 The cost and acquisition of eye exams or prescriptions needed to obtain personalized safety glasses or respirator insert glasses.
- 2.4.5 Eye examinations are the employee's responsibility; therefore, they shall be completed on the employee's time.
- 2.4.6 Responsible for always having some form of minimum required eye protection with them on the job when working in regular areas where eye protection is needed.

## 3.0 APPLICABILITY

- 3.1 This program shall apply to all PPL Electric Utilities employees. Visitors to areas designated as eye protection work areas shall also comply with prudent eye protection standards.

## 4.0 TERMS AND DEFINITIONS

- 4.1 **Safety Glasses** - Unless specified otherwise for specific applications, safety glasses shall be of the industrial strength type which complies with requirements of ANSI/ISEA Z87.1 – 2015. Normally, such spectacles will have clear (non-tinted) lenses and permanently mounted, perforated or solid, clear side shields.
- 4.2 **Plano Glasses** - Non-prescription safety glasses.
- 4.3 **Respirator Insert Glasses** - temple-less glasses (prescription lenses and frames only) that are designed to fit inside specific full face piece respirators.
- 4.4 **Personalized Safety Glasses** - Plano or prescription safety glasses that meet the requirements of this program, but are purchased by employees who desire



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some feature(s) not provided by the company supplied safety glasses, e.g., a different frame style or prescription lenses.

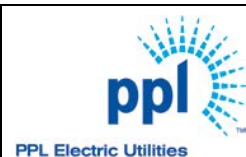
- 4.5 **Minimum Required Eye Protection** - Safety glasses or safety mono-goggles.
- 4.6 **Eye Protection Work Areas** - Posted work areas in which all occupants are required to wear the required eye protection at all times.
- 4.7 **Non-Eye Protection Work Areas** - Any employee environment not specifically identified and posted as an eye protection work area. Additionally, the following specific areas are generally considered non-eye protection work areas when within an entire complex (e.g., a power plant) designated as an eye protection work area:
  - 4.7.1 Offices and conference rooms.
  - 4.7.2 Locker/washrooms and designated eating areas.
  - 4.7.3 Enclosed power plant station control rooms.
  - 4.7.4 The enclosed passenger compartment of vehicles.

**NOTE: Eye protection may still be required for certain maintenance or repair work done in work areas not placarded as eye protection areas.**

- 4.8 **Approved Vendor** - A vendor that supplies industrial type safety spectacles, which meet the requirements of ANSI/ISEA Z87.1-2015.

## 5.0 MAIN BODY

- 5.1 The company will provide approved industrial safety glasses in a Plano lens, for employees who do not need to wear prescription eyeglasses.
- 5.2 The company will provide safety goggles for wear over non-safety (street wear) glasses.
- 5.3 The company will provide respirator insert glasses at no cost to employees when identified by job requirements to wear such apparatus.
- 5.4 Company issued safety glasses or respirator insert glasses that are damaged, lost, stolen, or contaminated on the job will be repaired or replaced at company cost.
- 5.5 The company may provide arrangements with an approved vendor for employees who wish to purchase personalized safety glasses. However, all transactions with those vendors will be the responsibility of the employee.
- 5.6 Employees who prefer a different style of Plano glasses than that provided by the company or who desire additional types/styles may purchase them at their



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own expense, provided that they meet or exceed the current applicable standards found in ANSI/ISEA Z87.1 – 2015.

- 5.7 Employees who wear prescription glasses may comply with the minimum requirements of this program by either wearing safety goggles over their regular glasses or purchasing personalized prescription safety glasses.

**NOTE: All lens, frames, side shields, and accessories, must meet the requirements of ANSI/ISEA Z87.1 – 2015.**

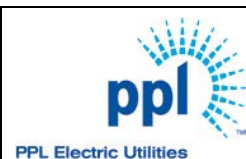
- 5.8 Employees who choose to comply with the requirements by wearing personal safety glasses must have at least one pair, which meet the definition of safety glasses for use indoors or at night.
- 5.9 Prescription safety glasses must have the manufacturer's compatible side shields for that model/style of (frames) glasses to meet the requirements of the Eye Protection Program.

**NOTE: All lens, frames, side shields, and accessories, must meet the requirements of ANSI/ISEA Z87.1 – 2015.**

- 5.10 Tinted lenses shall not be issued in lieu of clear lenses.
- 5.10.1 Mono-goggles equipped with ultraviolet absorber lenses are available so that tinted lenses will not be necessary for switching.
- 5.10.2 Tinted personalized safety glasses may be purchased as an additional pair of safety glasses for outside work activities or private use.
- 5.10.3 If specified by the employee's ophthalmologist or optometrist for vision correction, photo-chromic or tinted lenses will be permitted in lieu of clear lenses in eye protection work areas.
- 5.11 Purchase of Prescription Safety Glasses
- 5.11.1 Employee visits to professionals for eye examinations, eyeglass measurements, and fittings will be done on employee's own time.
- 5.11.2 Costs associated with the purchase of prescription glasses and the associated accessories, i.e., side shields, flex temples, nose pieces, etc., will be the employee's responsibility.

## 6.0 REFERENCES

- 6.1 PPL Electric Utilities Safety Rule Book



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### 7.0 REGULATORY REQUIREMENTS

- 7.1 [OSHA 1910.133 Eye and Face Protection](#)
- 7.2 ANSI/ISEA Z87.1 – 2015 Practice for Occupational and Educational Eye and Face Protection.

### 8.0 TRAINING / SAFETY - N/A

### 9.0 COMPLIANCE AND EXCEPTIONS - N/A

### 10.0 ATTACHMENTS - N/A

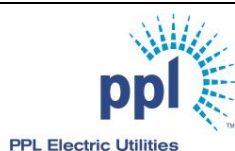
### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Updating ANSI/ISEA standards information, including free access to Annex J. Eye and Face Selection Guide			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		General Safety Procedure converted to EU Safety Procedure			



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- Click any **Table of Contents** link or other [links](#) to go to that section. (In Word, press **Ctrl** then clicks the [link](#).)
- Hold **Ctrl** then press **←** (back arrow) to go to last place viewed in the PDF (for most MOM Toughbooks®).
- Hold **Alt** then press **←** (back arrow) to go to last place viewed in the PDF (for most office laptops).

Press and hold “**Ctrl** and **F**” to search keywords in the PDF.



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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this Policy is to define PPL Electric Utilities (EU) Safety Compliance Management Program.
- 1.2 Identify the means, needed resources, tools and training, time frames and those responsible for managing the significant aspects and the Safety Compliance programs.
- 1.3 Identify legal, regulatory and corporate requirements applicable to PPL EU operations for maintaining safety compliance.

## **2.0 RESPONSIBILITY**

- 2.1 Implementation of a Safety Compliance Program requires support and participation from all levels within an organization. Elements defining these roles and responsibilities identified through use of a RACI chart are: Identify, Assess, Implement and Verify.
- 2.2 Attachment A - RACI Chart for Safety Compliance defines who is responsible, accountable, consulted and informed as it relates to each element of the Safety Compliance Program.

## **3.0 APPLICABILITY**

- 3.1 All PPL EU Employees

## **4.0 TERMS AND DEFINITIONS**

- 4.1 Computer Based Training (CBT) – Training program offered to employees through the use of a computer.
- 4.2 Responsibility, Accountability, Consultation and Identification (RACI) – A chart outlining roles and responsibilities associated with the identification, assessment, implementation and verification.

## **5.0 MAIN BODY**

- 5.1 Safety Compliance Program
  - 5.1.1 Legal Requirement Identification and Documentation - It is the responsibility of the PPL EU Safety Compliance staff to research and communicate new regulatory requirements and changes to existing



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regulations. All revisions to policies, procedures, and safety rules are communicated to the appropriate business group(s).

- 5.1.2 Safety Compliance Program Elements - The Safety Compliance Program Elements are reviewed utilizing the RACI chart (see attachment A). Each program area evaluation identifies the appropriate regulatory requirements, assesses current operating practices to identify conformance and/or changes, implemented through applicable procedures and verified by routine audits.

The program elements critical to PPL EU are:

- Hazardous Materials
- Personal Protective Equipment
- Energy Control Process
- Material Handling & Storage
- Power Generation, Transmission, Distribution
- Toxic & Hazardous Substances
- Scaffolding
- Confined Space
- Recordkeeping
- Federal Motor Carrier Safety Administration
- Temporary Traffic Control Guidelines

5.1.3 Training

- Annual general awareness training titled: PPL Corporation Standards of Integrity includes a section on workplace safety. This training is provided to all employees within PPL EU and it is designed to ensure that all employees and other representatives of the Company are informed about and adhere to accepted practices of company safety behavior as set forth in laws, ethics statements, and Company policy statements. The Code applies to all employees, temporary workers, contractors, agents, representatives, and consultants of the Company and its subsidiaries and affiliates, utilizing Company resources and conducting Company business.
- Periodic newsletters and safety memos/alerts are also provided to PPL EU employees and key stakeholders to communicate various safety messages and general awareness.
- Mandated safety training is also provided to PPL EU employees through various assigned classroom and CBT's based on job titles and duties. These CBT's provide employees with the information necessary to carry out the safety responsibilities that are associated with their job activities, such as working in confined spaces and handling hazardous waste. Specific classroom training for employees is provided on an as needed basis, such as lineman refresher training program.





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- Contractors receive safety awareness through PPL EU's TD&I contractor on-boarding program.
- Training development is a team effort between the EU Safety Compliance team and TD&I training and Development team.
- Safety is responsible to identify the regulatory training requirements including frequency and content as outlined by OSHA.
- EU Environmental is responsible to identify the regulatory training requirements including frequency and content as outlined by US EPA and PADEP.
- TD&I Training is responsible to consult with Safety Operations for content as they develop CBT and /or classroom materials. TD&I Training in consultation with Safety Operations shall determine the training audience and monitor completion of training.

#### **5.1.4 Communications**

- PPL EU Safety Information is communicated to our employees through various outlets such as:
  - TD&I Intranet Website – Safety section which contains procedures, contact information, guidance documents, reference documents/tools, environmental memos, forms/instructions, permits, specific facility information, emergency procedures and white papers/client alerts.
  - Monthly Performance Indicators (PI)
  - Periodic Reports to key PPL EU Senior Leadership and key PPL EU Managers highlighting progress related to environmental compliance issues, regulatory updates and future activity
  - News Feed (Grid articles, TD&I News, etc.) – Provides safety articles on topics of interest to those that require or have requested access.
- Corporate Communications Department manages external Communications with key stakeholders. One exception is that Safety Operations serves as the primary contact with the regulatory agencies on routine matters.

## **6.0 REFERENCES –**

- 6.1 OSHA 1904 Recordkeeping
- 6.2 OSHA 1910 Occupational Safety and Health Standards
- 6.3 OSHA 1926 Safety and Health Standards for Construction



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6.4 US DOT 49 CFR – Transportation Rules

- Sections 173 and 300 to 399

6.5 PA Publication 213 – Pennsylvania State Transportation Rules

6.6 National Electric Safety Code Part 4 – Work Rules

## 7.0 REGULATORY REQUIREMENTS - N/A 8.0 TRAINING / SAFETY

8.1 PPL EU Safety Rule Book

## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS

10.1 Attachment A – RACI Chart for Safety Compliance (Identify, Assess, Implement, and Verify)

## 11.0 RECORD RETENTION

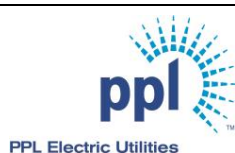
11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

11.2 This document shall be reviewed every 5 years by Safety Operations.

11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	02	Date	01/24/2020	Effective	02/01/2020
<b>Prepared by:</b>		Patrick Renshaw			
<b>Reviewed by:</b>		Jared Dyer, Bryan Kostik			
<b>Approved by:</b>		Brain Matweecha			
<b>Revision Comments:</b>		Revised section 5.1.3 defined Safety's role in regulatory and training identification, revised Environmental's role to clarify identification of regulations and training. Added references in Section 6 to appropriate OSHA, DOT, Pennsylvania and National Electric Code rules and regulations.			



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<b>Rev</b>	01	<b>Date</b>	06/01/2017	<b>Effective</b>	06/12/2017
<b>Prepared by:</b>	Deborah A. Sweinhart, Safety Operations				
<b>Reviewed by:</b>	Safety Pros: Jared Dyer, Brian Kostik				
<b>Approved by:</b>	Brian Matweecha – Manager, Safety Operations				
<b>Revision Comments:</b>	Conformed with the latest governance and oversight strategy by changing the title and format of this procedure to Safety Compliance Program Policy. Formerly titled: Safety Procedure and Safety Rule Book Revision Process.				

<b>Rev</b>	00	<b>Date</b>	04/15/2013	<b>Effective</b>	04/15/2013
<b>Prepared by:</b>	Jacque Creamer				
<b>Reviewed by:</b>	Adam Frederick, Richard Horan, Jeff Monsell				
<b>Approved by:</b>	Barry Downes				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				

 PPL Electric Utilities	<b>SP 09</b> <b>Safety Compliance Management Program</b>	0000-000-PR-8007 Custom ID: SP 09 Revision: 02 Effective Date: 02/01/2020 Page 1 of 11
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## Attachment A

### Identify-Assess-Implement-Verify

<u>Section</u>	<u>Sub Section</u>	<u>Identify</u>	<u>Assess</u>	<u>Implement</u>	<u>Verify</u>	<u>Notes</u>
1910 Subpart H - Hazardous Materials	1910.101 - Compressed Gases	safety	safety	Training	Safety	SP 12 and SRB section 12
	1910.120 - Hazardous waste operations and emergency response	ENV	ENV	ENV	ENV	Environmental Compliance
1910 Subpart I - PPE	All	safety	safety	Training	Safety	SP 02, SP 08, SP 21, SP 29 and SRB section 5
1910 Subpart J - General Energy Controls (Lock-out & tag Out)	1910.146 - Permit Required Confined Spaces	safety	training	Training	Safety	SP 03
	1910.147 - Lockout/Tagout (PPL buildings)	safety	safety	Training	Safety	SP 06, FM SP01
1910 Subpart N - Material Handling & Storage (1910.178)	1910.178 - Powered Industrial Trucks	safety	safety	Training	Safety	SP 33



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Section	Sub Section	Identify	Assess	Implement	Verify	Notes
1910.269 - Power Generation, Transmission, Distribution	a. general (application)					N/A
	(a)(2)Training	safety	training	training	training	SP 51
	(a)(3)Information Transfer	safety	safety	Safety	safety	SP 19
	b. Med Service 1st aid train	safety	training	training	training	SP 51
	c. Job Brief	safety	safety	Line Management	Line management	SP 39
	d. Energy Control					Does not apply to Transmission and Distribution
	e. enclosed spaces	Safety	Safety	Training	safety	SP 03
	f. excavations					Refer to 1926 Subpart P - SP 18
	g. PPE (fall protection)	Safety	Work Methods	Training	safety	100% fall protection and arc tested harnesses - SP 02
	h. portable ladders and platforms	Safety	safety	Training	safety	SP 35
	i. hand held port equip	Safety	Work Methods	Work Methods	Work Methods	SRB Section 3
	j. live line	Safety	Work Methods	Work Methods	System Shops	SP 51
	k. mat had store	Safety	safety	Safety	Safety	SP 51



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Section	Sub Section	Identify	Assess	Implement	Verify	Notes
1910.269 - Power Generation, Transmission, Distribution (CONT'D)	I. work near energize equip	Safety	safety	Work Methods	safety	SRB Section 8, SP 51, DDI-RGS work method,
	m. Permit & Tag	safety	safety	DCC	safety	SP 07 annual audit - mgr/foreman audits
	n. ground	safety	Work Methods	Work Methods	safety	SP 05
	o. test facility	safety	System Shops	System Shops	safety	SP 51
	p. mechanical equip	safety	Transportation	Transportation	safety	
	q. overhead line & Live Line bare hand	safety	safety	Work Methods	safety	Live line would be applicable to PPL EU contractors and implemented by safety in Contractor Onboarding. Overhead line installation would be implemented by Work Methods
	r. Line Clearance tree trim	safety	safety	safety	safety	This would be covered in the contractor onboarding
	s. comm facilities	safety	safety	Safety	safety	SP 16
	t. underground installations	safety	training	Training	training	SP 51
	u. substations	safety	training	Substations Standards	safety	SP 51
	v. power gen plants					Not applicable to PPL EU
	w. special conditions (i.e. caps)	safety	Work Methods	Work Methods	Safety	A special condition is a catch all and includes many different components which cover many departments for each particular item. SP 51 includes some of these components that are applicable PPL EU.



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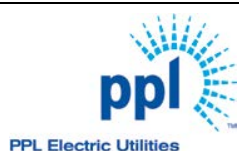
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Section	Sub Section	Identify	Assess	Implement	Verify	Notes
1910 Subpart Z - Toxic & Hazardous Substances	1910.1001 - Asbestos	safety	safety	Work Methods	Safety	SP 41
	1910.1025 - Lead	safety	safety	Work Methods	Safety	SP 22
	1910.1200 - Hazardous Communication	safety	safety	safety	Safety	SP 11
1926 Subpart L - Scaffolding	All	safety	training	Training	Safety	SP 14
1926 Subpart M - Fall Protection	All	safety	safety	Work Methods	Safety	SP 02
1926 Subpart P - Excavations	All	safety	safety	Training	Safety	SP 18
1926 Subpart V - Electric Power Transmission and Distribution						1926 Subpart V is Harmonized with 1910.269. Refer to table above pertaining to 1910.269.
1926 Subpart AA - Confined Space in Construction						1926 Subpart AA is Harmonized with 1910.146. Refer to table above pertaining to 1910.146
1926 Subpart CC - Cranes and derricks in Construction	All	Safety	training	Training	training	SP 57
Recordkeeping - 1904	All	Safety	safety	safety	Safety	SP 31

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Section	Sub Section	Identify	Assess	Implement	Verify	Notes
49 CFR 173 - General requirements for shipments and packaging	173. 2, 173.2a, 173.4, 173.6	safety	safety	training	training	
49 CFR 300-399 Federal Motor Carrier Safety Administration	380-383 and 390-395	safety	safety	Training/Health Services	Training/Health Services/Safety	SP 28
Publication 213 - Temporary Traffic Control Guidelines	All	safety	safety	Training	Safety	SP 01
National Electric Safety Code -(Note Part 4 is Safety ) - work rules for the operation of electrical supply and communication lines and equipment						This is very similar 1910.269 and IAIV are much the same for NESC. See table above for 1910.269.



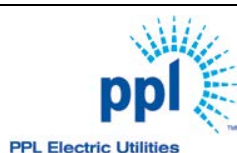


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SAFETY PROCEDURE  
FAN GUARDS**

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### **1.0 PURPOSE/SCOPE**

- 1.1 Cooling fans, whether associated with equipment or the stand-alone type, are a safety concern to our employees. Cooling fans on power transformers are of particular concern.
- 1.2 “Exposure of blades. When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half inch.”
- 1.3 Although the OSHA regulation is applicable to all fans under the mentioned conditions, the following procedure is directed only to transformers with cooling fans. These fans may be used in oil to air heat exchangers, or fans used for air cool radiators of the transformer.
- 1.4 Transformers using ambient air-cooling do not require the application of this procedure.

### **2.0 RESPONSIBILITY**

- 2.1 It is PPL Electric Utilities responsibility to assure a safe work environment for employees.
- 2.2 Every employee shall adhere to this procedure.

### **3.0 APPLICABILITY**

- 3.1 This procedure is directed only to transformers with cooling fans.

### **4.0 TERMS AND DEFINITIONS – N/A**

### **5.0 MAIN BODY**

- 5.1 Potential injury due to contact by an employee with rotating cooling fan blades.
- 5.2 Remediation
  - 5.2.1 All transformers with cooling fans that are seven (7) feet or less from the ground or working level will have guards with openings no larger than one-half inch. The guards should be of the permanent type, or made of nylon or wire mesh (placed over the top of existing permanent guards). A program is to be developed, implemented and maintained to inspect transformers for cooling fans that are not in compliance with this regulation.



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5.2.2 When employees must work on, or in the vicinity of rotating transformer cooling fans that have openings greater than one-half inch\*, the following steps must be taken:

- a. A tailboard conference shall be conducted with all applicable workers before any work is performed on or in the vicinity of the fan(s). The tailboard shall contain information as to the method(s) of isolation to be used, the boundaries of the protection, and reason for any barriers that are installed.
- b. Using the Energy Control Process, isolate the cooling fans where the work will be performed.

**\*NOTE:** Fans that are seven (7) feet above the normal work surface may have openings larger than one-half inch.

- c. If other fans are in close proximity to the fans being worked on, and they are running or in a standby state, they should be:
  - De-energized using the Energy Control Process, **or**
  - Barrier(s) or barricade(s) placed around them in such a manner as to prevent accidental contact of the rotating fans by workers.

**\*NOTE:** This can be accomplished by using a temporary fan guard such as nylon mesh. However, the fans shall be de-energized while the temporary guard is being installed.

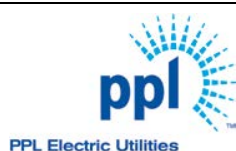
### 5.3 Future

5.3.1 Purchase of Transformers: PPL EU will not purchase transformers and/or transformer cooling systems that do not meet OSHA compliance.

5.3.2 Retrofitting of transformers and/or transformer cooling system will have the following specification included in the retrofit bid process:

“Exposure of fan blades: When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half inch.”

## 6.0 REFERENCES – N/A



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### 7.0 REGULATORY REQUIREMENTS

7.1 [OSHA 1910.212 General requirements for all machines](#)

### 8.0 TRAINING – N/A

### 9.0 COMPLIANCE AND EXCEPTIONS – N/A

### 10.0 ATTACHMENTS – N/A

### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Included the applicable OSHA standard link			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, and Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		General Safety Procedure converted to EU Safety Procedure			



**SP 11  
SAFETY PROCEDURE  
HAZARD COMMUNICATION and CHEMICAL  
APPROVAL PROCESS**

0000-000- PR-8009  
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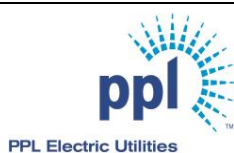
## REVISION SUMMARY – 01

Section 5 revised significantly; included as Attachments: A) PPL Restricted Chemical List; B) SDS Training Form, and C) New Chemical Risk Review Flow Chart (SafeTec Process).

## NAVIGATING THIS DOCUMENT (PDF)

1. Click any **Table of Contents** link or other [links](#) to go to that section. (In Word, press **Ctrl** then click the [link](#).)
2. Hold **Ctrl** then press **← (back arrow)** to go to last place viewed in the PDF (for most MOM Toughbooks®).
3. Hold **Alt** then press **← (back arrow)** to go to last place viewed in the PDF (for most office laptops).

**Press and hold “Ctrl and F” to search keywords in the PDF.**



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SAFETY PROCEDURE  
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APPROVAL PROCESS**

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## **1.0 PURPOSE/SCOPE**

- 1.1** This procedure provides instructions to ensure compliance with OSHA regulations associated with reviewing and communicating risks associated with hazardous chemicals, including:
  - 1.1.1** Labeling Instructions
  - 1.1.2** Safety Data Sheets (SDS)
  - 1.1.3** Chemical Approval Process
  - 1.1.4** Chemical Inventory Lists
  - 1.1.5** Performing Hazardous Non-routine Tasks
- 1.2** The above includes methods for ensuring that all PPL Electric Utilities personnel and Contractors are aware of chemical hazards present at PPL EU work sites.

## **2.0 RESPONSIBILITY**

- 2.1** Health and Safety Representative(s)
  - 2.1.1** Provide oversight of the Hazard Communication Program at PPL EU.
  - 2.1.2** Provide technical expertise to PPL EU employees.
  - 2.1.3** Ensure PPL EU departments/facilities review Chemical Inventory Lists periodically.
  - 2.1.4** Review this program and supporting documents periodically to ensure that they are current.
- 2.2** Supervisors
  - 2.2.1** Provide a safety, health and environmental evaluation and approve or reject new chemical requests based on the Chemical Approval Process (SafeTec).
  - 2.2.2** Ensure their employees are trained on hazard communication and hazards of the chemical products that are used.
  - 2.2.3** Ensure that employee hazardous chemical Training is documented.
  - 2.2.4** Review the applicable Safety Data Sheet with employees before a chemical is issued for use.
  - 2.2.5** Ensure Contractors receive information about any chemical hazards at existing PPL EU facilities.
  - 2.2.6** Provide a copy of the Hazard Communication Plan to Contractors.
- 2.3** Employees
  - 2.3.1** Attend or complete required Training for chemical hazards of a work area prior to entering that work area.
  - 2.3.2** Attend or complete required Training regarding any new chemical introduced to their work area.
  - 2.3.3** If new chemical is required, enter new chemical information into SafeTec.



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- 2.3.4 Ensure that all new chemicals are reviewed and approved before they are brought on-site.
- 2.3.5 Ensure that all containers have clearly readable OSHA compliant labels.
- 2.3.6 Ensure that all necessary safeguards are in place before chemicals are brought on-site.
- 2.3.7 Ensure that each Site Chemical Inventory and Safety Data Sheets are kept current.
- 2.3.8 Employees may be required to perform tasks that are non-routine and potentially hazardous. See Section 5 in this procedure.

**2.4 Contractors**

- 2.4.1 Maintain an up-to-date list of all hazardous and non-hazardous chemicals brought to any PPL EU sites.
- 2.4.2 Provide PPL EU information about any hazardous chemicals brought on-site prior to the actual date of work intended. (This helps to avoid delays due to the required chemical approval process.)
- 2.4.3 Provide PPL EU information via SafeTec about any hazardous chemicals intended to be kept on-site after completion of work.
- 2.4.4 Contractors are responsible to ensure all chemicals are removed from site at completion of job. Make readily available all Safety Data Sheets for their own employees and PPL EU employees.

**3.0 APPLICABILITY**

- 3.1 This procedure applies to all PPL EU Employees and Contractors working with hazardous chemicals on any PPL EU Transmission and Distribution system site.

**4.0 TERMS AND DEFINITIONS**

- 4.1 **Safety Data Sheet (SDS)** – A document that contains information on the potential hazards of, and how to work safely with, the chemical product. Employers shall have a safety data sheet in the workplace for each hazardous chemical which they use. 1910.1200(g)(1)
- 4.2 **Chemical Inventory List** – A list of the hazardous chemicals known to be present using a product identifier that is referenced on the appropriate safety data sheet (SDS). (1910.1200(e)(1)(i))
- 4.3 **Chemical Review Process** – The process used at PPL EU which reviews the hazardous chemical information to determine whether the chemical shall be allowed to be used at PPL EU.
- 4.4 **Labeling** – The chemical manufacturer, importer, or distributor's label of the hazardous material. 1910.1200(f)(1) Also, the details of the Hazard Communication Program developed by the employer, including: an explanation of the labels received on shipped containers; the workplace labeling system used by the employer; and the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information. 1910.1200(h)(3)(iv)



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- 4.5 SafeTec** – The PPL EU database which contains all hazardous (and non-hazardous) chemical safety data sheets (SDS) and a list of all chemicals currently on-site at each PPL EU facility. New chemical information must be entered into SafeTec for PPL EU approval.
- 4.6 Asset Suite** – The PPL EU database where all products are described and cataloged for PPL EU purchase. Searches can be made by Catalog ID numbers (CID #) or by product name.
- 4.7 Hazard Communication Program** – Classifying the potential hazards of chemicals and communicating information concerning hazards and appropriate protective measures to employees. This may include, but is not limited to provisions for:
- 4.7.1** Developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present;
  - 4.7.2** Labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces;
  - 4.7.3** Preparation and distribution of safety data sheets to employees and downstream employers; and
  - 4.7.4** Development and implementation of employee training programs regarding hazards of chemicals and protective measures. 1910.1200(a)(2)
- 4.8 Work Area** – A room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.
- 4.9 Workplace** – An establishment, job site or project at one geographical location containing one or more work areas.





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## 5.0 MAIN BODY

This section is organized as follows:

- Labeling (5.1)
- Safety Data Sheets (SDS) (5.2)
- Chemical Approval Process (5.3)
- Exceptions to the Chemical Approval Process (5.4)
- Chemical Inventory Lists (5.5)
- Employee Training (5.5.3)
- Hazardous Non-Routine Tasks (5.7)

### 5.1 Labeling

**5.1.1** All chemical containers must be labeled with the following information:

1. Chemical Identity
2. Hazard Warning (HMIS or equivalent)
3. Chemical manufacturer's name and address (material's in original package)

**5.1.2** All labels must contain the following information:

1. Product name or identifier
2. Pictograms
3. Signal words
4. Statement of hazards
5. Precautionary statements
6. First aid
7. Name of company, address, and phone number

**Note:** These labeling requirements do not apply to chemicals transferred to a temporary secondary container (e.g., bucket, measuring cup, etc.) if they are to be used **immediately** by the person performing the transfer within that work shift and not left unattended.

**5.1.3** Employees who receive vendor-supplied chemical products are responsible to verify that all containers have clearly readable OSHA-compliant labels.

**5.1.4** Original labels shall never be removed unless otherwise directed.

**5.1.5** If original label is missing or not legible or required for secondary container, a new label must be printed and attached to the container.

**5.1.6** If a chemical is transferred to a secondary container that is not for immediate use by the employee that performs the transfer, employees must ensure that the container is properly labeled with an appropriate label. It must contain the following information:

1. Chemical Identity



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2. Hazard Warning (HMIS/GHS equivalent)
3. Chemical Manufacturer's name and address

**5.2 Safety Data Sheets (SDS)**

- 5.2.1** An SDS is required to be supplied by the manufacturer or supplier of the hazardous chemical.
- 5.2.2** Chemical manufacturers and suppliers are required to revise an SDS when the formulation or hazard of the product changes.
- 5.2.3** New chemical products brought into PPL Electric Utilities must have an SDS submitted electronically via the SafeTec system.
- 5.2.4** An SDS is automatically updated every three years by SafeTec.
- 5.2.5** All employees have access to safety data sheets via the SafeTec system.

**5.3 Chemical Approval Process (SafeTec)**

- 5.3.1** All new chemicals to be brought on-site at any Electric Utilities facility must be approved before entering the facility.
- 5.3.2** Approval requests shall be entered in SafeTec by entering and submitting:
  - New chemical information, and
  - Electronic copy of the SDS
- 5.3.3** A health and environmental evaluation shall be completed and the chemical shall be approved or rejected based on the review process:

**Note:** See Attachment C Job Aid for Requesting New chemicals (SafeTec web entries) for detailed information on the review and approval process.

1. **Approved for Use:** Once the chemical is approved, it shall be processed by SafeTec. An email shall be sent to Logistics / Supply Chain and the chemical will be ready for purchase and use through Asset Suite. Once a chemical is approved, it may be purchased and used for intended purposes only.
2. **Not Approved:** Chemicals shall not be approved if they are on PPL Electric Utilities restricted chemical-use list or if they present an unacceptable environmental, health, or safety risk. The requester shall be notified via email that their request has been denied; the employee is responsible for finding a suitable replacement.

**Note:** Chemicals that have not been approved may not be purchased, received, or used within PPL Electric Utilities. Contact your Health and Safety Representative for further assistance if required.



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3. **Special-Use-Only:** Chemicals with this designation indicate the product contains hazardous ingredients and that it has not been approved for PPL EU companywide use. Users must conform to special precautions or licensing requirements. These products:
  - Must not be stored on the property except for a one-time-only approval
  - Are not to be used by employees unless they are properly trained
4. **Sample Products:** Employees may not accept products from suppliers or salespersons unless approved for trial demonstration. Prior to accepting a sample or test product, the user shall send a copy of the SDS to their Health and Safety Representative along with a description of the trial use.

#### 5.4 Exceptions to the Chemical Approval Process

Some products are generally preapproved based on their class and risk and are not subject to the approval process and SDS requirements. These include:

##### 5.4.1 Water-based latex paints

**5.4.2** Household consumer products (such as air fresheners, hand soaps, lotions, etc.) when the products are used in the workplace in the same manner they would be used by a normal consumer, and where the duration and frequency of use (exposure) is not greater than what the typical consumer would experience

**5.4.3** Prior to entering a new chemical in SafeTec for approval, the employee requesting approval shall conduct an initial review of the chemical product that includes the following:

1. Are there any components that are on the Restricted Chemical List?
2. Does the chemical present significant risk? Are there similar, less hazardous products available for use?
3. If the chemical does present a significant hazard and is deemed not replaceable, can engineering controls, administrative controls, or personal protective equipment (PPE) reasonably be used to reduce personal exposures to below-acceptable levels?

#### 5.5 Chemical Inventory Lists

**5.5.1** Chemical inventory lists are available via the SafeTec system.

1. Using the "Advanced Search" function for all chemicals, select the PPL Electric Utilities location to generate a list in the form of an Excel® spreadsheet.
2. The spreadsheet will contain a list of all chemicals currently on-site at each facility.
3. Contact your supervisor and/or your Health and Safety Representative if you need assistance in generating this list.

**5.5.2** Chemical inventory lists shall be reviewed periodically by each department / facility.

**5.5.3** Oversight of the program is the responsibility of the Safety Operations group.



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**5.6** Employee Training

**5.6.1** Employees that work with chemicals are required to receive training on:

1. Hazards upon assignment to the work area, and
2. Chemical hazards introduced to their work area when a new chemical is approved for use.

**5.6.2** Training shall consist of two components:

1. **MST251 – Hazard Communication (and Evacuation).** This training is required for all PPL Electric Utilities employees and addresses the following:
  - An overview of the OSHA Hazard Communication Standard and PPL Electric Utilities hazard communication requirements
  - How to identify hazardous chemicals present in the work area
  - How to determine the presence or release of hazardous chemicals in the work area
  - The physical and health risks of hazardous chemicals
  - Symptoms of overexposure
  - How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices, and personal protective equipment (PPE)
  - Steps that PPL Electric Utilities has taken to reduce or prevent exposure to hazardous chemicals
  - Procedures to follow if employees are over-exposed to hazardous chemicals
  - How to read labels and SDSs to obtain hazard information
  - How to locate SDSs in SafeTec
2. **Hazard-specific Training**
  - Supervisors are responsible to assure that their employees are trained on hazard communication and on hazards of the chemical products that are used.
  - Supervisors shall issue and review the applicable SDS before the chemical is issued for use.
  - Training shall be documented and can be done using a tailboard form. This may cover some of the following topics:
    - Personal Protective Equipment (PPE)
    - Work methods to reduce hazards
    - Acceptable containers
    - Location of storage and use
    - Emergency procedures and spill response procedures
    - Physical and health hazards



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**5.7 Hazardous Non-routine Tasks**

**5.7.1** Employees may be required to perform tasks that are non-routine and potentially hazardous.

5.7.1.1 This may include confined space entry, painting, etc.

**5.7.2** Prior to the start of the task, every affected employee shall be given information by their Supervisor about any hazardous chemicals they may encounter during the non-routine activity. This will include:

1. Specific hazards
2. Protective and safety measures that employees can use
3. Steps the company is taking to reduce the hazards, including:
  - Ventilation
  - Respirators
  - The presence of another employee, and
  - Any site emergency procedures

**6.0 REFERENCES**

**6.1** Hazard Communication and Chemical Risk Review Process

**6.2** Safety Rule Book

**6.3** SafeTec

**6.4** Monthly Compliance topic

**7.0 REGULATORY REQUIREMENTS**

**7.1** OSHA 29 CFR 1910.1200 Hazard Communication Standard

**8.0 TRAINING & SAFETY**

**8.1** Training

**8.1.1** MST251 – HazCom and Evacuation


**8.2** Safety

**8.2.1** PPL EU Safety Rule Book

**9.0 COMPLIANCE & EXCEPTIONS**

**9.1** All PPL EU employees must comply with this Safety Procedure.

**9.2** Exceptions to the chemical product approval process are provided in Section 5 of this procedure.

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## 10.0 ATTACHMENTS

- 10.1 Attachment A – PPL Restricted Chemical List
- 10.2 Attachment B – SDS Training Form
- 10.3 Attachment C – Job Aid for requesting a new chemical

## 11.0 RECORD RETENTION

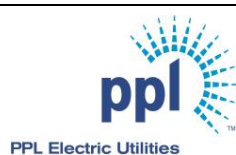
- 11.1 Record retention shall be consistent with the PPL Corporate Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed **periodically** by the PPL EU Health & Safety and Environmental Compliance Teams.
- 11.3 The review shall be facilitated by Safety Operations

## 12.0 RECORD OF REVISIONS

Rev	02	Date	5/8/2019	Effective	06/2012019
<b>Prepared by:</b>		Elizabeth McKay, Health and Safety Specialist			
<b>Reviewed by:</b>		Pat Renshaw Environment Project Manager, Elizabeth McKay Health and Safety Specialist			
<b>Approved by:</b>		Brian Matweecha Manager – Safety Operations			
<b>Revision Comments:</b>		Update verbiage to periodic reviews, correction of typos			

Rev	01	Date	04/20/2015	Effective	08/07/2015
<b>Prepared by:</b>		Deborah Sweinhart (Proj Mgr-Health & Safety)			
<b>Reviewed by:</b>		Jacque Creamer (Proj Mgr-Health & Safety), Richard Horan (Sr Health & Safety Specialist), Brian Kostik (Sr Health & Safety Specialist), Jeff Monsell (Proj Mgr-Health & Safety), Jared Dyer (Sr Health & Safety Specialist), Steve Mondschein (Health & Safety Specialist)			
<b>Approved by:</b>		Brian Zickefoose (R-Mgr-Health & Safety-EU)			
<b>Revision Comments:</b>		Section 5 revised significantly, added Attachment C, New Chemical Risk Review Flow Chart (SafeTec Process).			

Rev	00	Date	03/24/2013	Effective	03/24/2013
<b>Prepared by:</b>		Jacque Creamer (Proj Mgr-Health & Safety)			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure.			



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## **Attachment A – PPL Restricted Chemical List**

**PPL Restricted Chemicals List** – The chemical review process exists to eliminate or minimize the use of hazardous chemicals. Following is a list of special hazards that are of particular significance to the review process. If approved, special handling procedures may be required.

- Asbestos
- Benzene
- Carcinogens
- Chemicals which compromise the environment
- Formaldehyde
- Glycol Ethers and Glycol Acetates
- 2-Methoxyethanol CAS 109-86-4
- 2-Ethoxyethanol CAS 110-80-5
- 2-Methoxyethyl Acetate CAS 110-49-6
- 2-Ethoxyethyl Acetate CAS 111-15-9
- 2-Butoxyethanol CAS 111-76-2
- 2-Phenoxyethanol CAS 122-99-6
- Ethylene glycol dimethyl ether 110-74-4
- Bis (2-Methoxyethyl) ether 111-96-6
- 2-(2-ethoxyethoxy) ethanol 111-90-0
- 1-Methoxy-2-propanol (Also known as Propylene
- Glycol monomethyl ether) CAS 107-98-2
- 2-Butoxyethyl Acetate CAS 112-07-2
- Halons
- Lead
- Mercury
- Methylene Chloride
- Mutagens
- Perchloroethylene
- Reproductive Hazards
- Solvent mixtures which may change over time
- Special Hazardous Substances (Pennsylvania Right to Know)
- Styrene
- Teratogens
- Trichloroethylene



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## Attachment B – SDS Training Form

### SDS Training Form

The General Safety Procedure Section 11 on Hazard Communication (OSHA 1910.1200) requires that employees be trained on hazardous chemicals in their work area at the time of their initial assignment and whenever a new hazard is introduced into their work area. This training must include the physical and health hazards of the chemicals in the work area and the measures employees can take to protect themselves from these hazards, including correct work practices, emergency procedures, and personal protective equipment to be used. Document this review of the Material Safety Data Sheet with this form by attaching a copy of the SDS and filing it appropriately with other similar safety training reviews.

Trade Name:	
Manufacturer:	
Date of SDS:	


Reviewer (Supervisor) reviews the contents of the SDS with affected personnel and must address the following topics (as appropriate):

- location of storage and use
- acceptable transfer containers
- work practices
- physical and health hazards
- methods and observations to detect presence of chemical (odor, appearance)
- personal protective equipment
- work methods to minimize hazard
- emergency procedures
- what to do if chemical spills


Name	Employee #	Name	Employee #

Discussion Leader Signature:	
Title and Employee #	



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**Attachment C – Job Aid for Requesting New chemicals (SafeTec web entries)**



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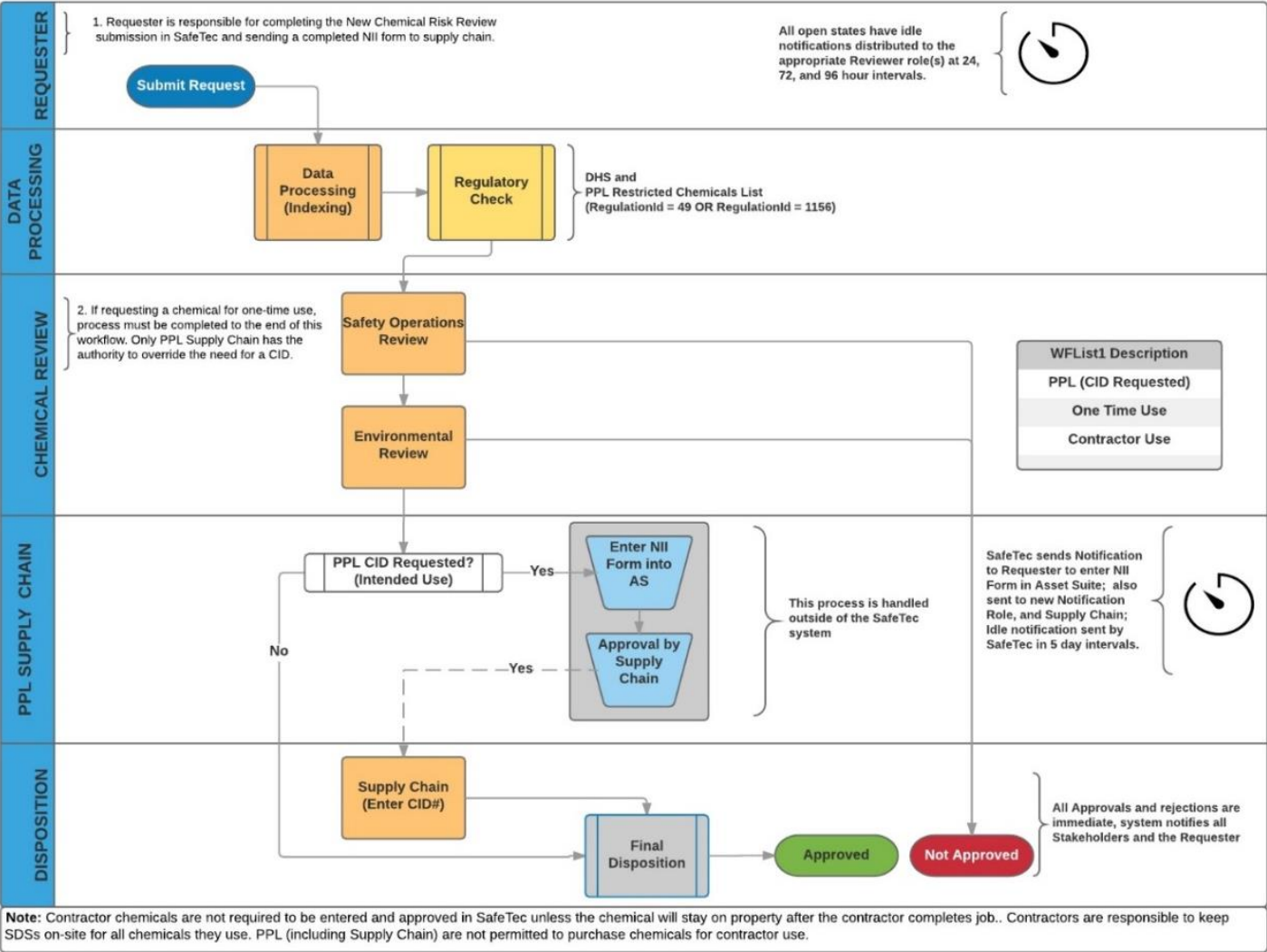
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### 1.0 PURPOSE/SCOPE

- 1.1 The purpose of this procedure is to reduce or eliminate the potential for injury to people and damage to property that can result from fires or explosions that arise when hot work is performed outside of a designated hot work area.
- 1.2 This procedure establishes a permit authorization system to ensure that all hazards are evaluated and that appropriate safety measures and controls are taken prior to and during any operation involving open-flames or that produces heat and/or spark performed outside of a designated hot work area.

### 2.0 RESPONSIBILITY

- 2.1 All workers performing Hot Work shall follow this procedure when work is performed outside of a designated hot work area.

### 3.0 APPLICABILITY

- 3.1 The Hot Work Permit system is intended to assure that the individuals involved in construction, renovation, repairs and maintenance of facilities are aware of the hazards associated with hot work and welding and that they implement control measures to help mitigate them.

### 4.0 TERMS AND DEFINITIONS

- 4.1 **Hot Work** - Defined as cutting, welding, soldering and brazing operations for construction/demolition /maintenance/repair activities that involve the use of portable gas or arc welding equipment. The use of these types of equipment for cutting and welding can introduce significant fire hazards into buildings.
- 4.2 **Fire Watch** - Trained personnel who are in attendance during the entire hot work operation and are immediately available to extinguish a fire or take other effective action if needed.

### 5.0 MAIN BODY

- 5.1 Hot Work
  - 5.1.1 Operations shall be allowed without the requirement of a permit only in areas that have been designated as a hot work area; otherwise, a hot work permit is required.



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- 5.1.2 The hot work permit must be posted at the site of the hot work.
- 5.1.3 Hot work shall not be permitted in areas not authorized by management.
- 5.1.4 The individual responsible to complete the hot work shall receive approval from Facilities Management and Contractor Representative that the work conditions are safe to precede.
- 5.1.5 Before hot work can be carried out in any area the area shall be cleared of all combustible and flammable materials, at a minimum distance of 35 feet in all directions.
  - a. If the material cannot be removed, shielding or guarding made of non-combustible or flameproof material shall be used to cover the area exposed to flames, sparks or slag.
- 5.1.6 A suitable fire extinguisher shall be located within easy reach of operations.
- 5.1.7 All cutting, welding, or burning operations to be done within confined spaces require a hot work permit and a Confined Space Entry Permit
- 5.2 Fire Watch
  - 5.2.1 A fire watch is required if any of the following conditions exist:
    - Combustible materials are within 35 feet of hot work
    - b Combustible materials are outside 35 feet and easily ignitable by the work being performed.
    - c Wall or floor openings within 35 feet which expose combustible materials.
    - d Combustible materials are on the other side of an adjacent wall, floor, partition, ceiling or roof and easily ignitable by conduction or radiation.
  - 5.2.2 Fire watch will be trained in the use of extinguishing equipment and how to sound the alarm.
  - 5.2.3 A fire watch will remain on guard at the location during the hot work activity and a minimum of at least 30-60 minutes after work has stopped. Depending on the work done, the area may need to



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be monitored for longer (up to 3 hours) after the end of the hot work

5.2.4 The Fire watch must be capable of monitoring the entire area affected by the hot work.

5.3 Tanks, Vessels, Drums, etc.

5.3.1 Tanks, vessels, drums, etc., which have contained flammable or toxic liquids will be filled with water or thoroughly cleaned before hot work is undertaken on them.

### **6.0 REFERENCES**

6.1 [NFPA \(National Fire Protection Association\) 51B](#)

6.2 PPL Safety Rule Book

### **7.0 REGULATORY REQUIREMENTS**

7.1 [OSHA 29 CFR 1910.252 Welding, Cutting, and Brazing](#)

### **8.0 TRAINING / SAFETY**


8.1 All employees performing hot work must take [Mandated Safety Training \(MST\) 460 - Fire Safety for Hot Work CBT](#)

8.2 Personnel who are in attendance during the entire hot work operation and are immediately available to extinguish a fire or take other effective action if needed, must be trained the use of fire extinguishers and must take MST 460.

### **9.0 COMPLIANCE AND EXCEPTIONS N/A**

### **10.0 ATTACHMENTS**

- 10.1 Hot Work Permit
- 10.2 Hot Work In Progress Watch For Fire Checklist
- 10.3 Hot Work In Progress Watch For Fire Poster

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## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Added NFPA standard version			

Rev	00	Date	08/29/2012	Effective	08/29/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





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**ATTACHMENT A – HOT WORK PERMIT**

**HOT WORK PERMIT**

This Hot Work Permit is required for any temporary operation involving open flames or which produces heat and/or sparks not performed in a designed area. This includes, but not limited to: Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing, Welding and the use of Heat Guns.

HOT WORK BEING DONE BY:

PPL EMPLOYEE \_\_\_\_\_  
CONTRACTOR \_\_\_\_\_  
PPL REPRESENTATIVE IN CHARGE \_\_\_\_\_

DATE / TIME:

LOCATION / BUILDING & FLOOR:

NATURE OF JOB:

Fire Watch Provider Name:

Hot Work Start Time:

Hot Work Stop Time:

Permit Posted Time:

**FIRE WATCH SIGNOFF**

Work area and all adjacent areas to which sparks and heat might spread were inspected during the fire watch period and were found fire safe. Fire-watch steps have been completed.

**SIGNED:** \_\_\_\_\_ **Date / Time** \_\_\_\_\_



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**ATTACHMENT B – HOT WORK IN PROGRESS WATCH FOR FIRE  
CHECKLIST**

## **HOT WORK IN PROGRESS WATCH FOR FIRE**

**REQUIRED PRECAUTIONS CHECKLIST Place check in front of all completed items.**

- ☐ Available sprinklers, hose streams and extinguishers are in service.
- ☐ Hot Work equipment in good repair.

**WITHIN 35 FEET OF WORK**

- ☐ Flammable liquids, dust, lint and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.  
Floors swept clean of combustibles.
- ☐ Combustible floors wet down, covered  
with damp sand, metal or fire-resistive  
tarpaulins.
- ☐ Remove other combustibles or protect with  
Fire-resistive tarpaulins or metal shields.
- ☐ All wall and floor openings covered.
- ☐ Fire-resistive tarpaulins suspended beneath  
work to collect sparks.

**WORK ON WALLS OR CEILINGS**

- ☐ Construction noncombustible and without  
combustible covering.
- ☐ Combustibles moved away from other side of  
walls.

**WORK ON ENCLOSED EQUIPMENT**

- ☐ Equipment cleaned of all combustibles.
- ☐ Containers purged of flammable vapors.



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**FIRE WATCH**

- \_\_\_ Fire watch to be provided during and for 60 minutes after work completed in all areas.
- \_\_\_ Fire watch to be provided for 4 hours after work in areas without smoke detection.
- \_\_\_ Supplied with appropriate extinguisher(s).
- \_\_\_ Trained in the use of equipment and in sounding fire alarm.
- \_\_\_ Fire watch may be required for adjoining areas above and below.

**OTHER PRECAUTIONS TAKEN**

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**ATTACHMENT C – HOT WORK IN PROGRESS WATCH FOR FIRE POSTER**

# **WARNING!**

**HOT WORK IN  
PROGRESS  
WATCH FOR FIRE**

**In Case of Fire**

**Call 911**

**Activate fire alarm system**

**Alert occupants to evacuate  
building.**

**Notify PPL Representative.**

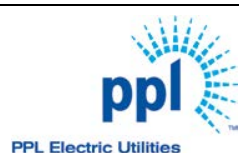


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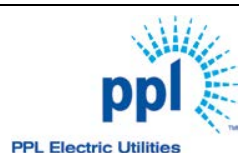
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### **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish safety requirements to be followed by PPL Electric Utilities when erecting/dismantling/use/inspecting of scaffolding , in order to mitigate the risk of a safety impact concern posed by scaffolding as a temporary structure and there by satisfying the OSHA requirements.
- 1.2 This procedure is applicable to all scaffolds, temporary and/or permanent erected and used. It does not apply to crane or derrick suspended personnel platforms.

### **2.0 RESPONSIBILITY**

- 2.1 TD&I Safety Operations
  - 2.1.1 Assure availability of approved training in the proper erection/dismantling and use of scaffold, in accordance with this procedure and applicable safety rules.
  - 2.1.2 Provide guidance and consultation on issues involving scaffold.
- 2.2 Supervisors
  - 2.2.1 Require employees to work within the previsions of this procedure.
  - 2.2.2 Assure that applicable employees receive training.
  - 2.2.3 Designate competent person as determined by their training and ability.
- 2.3 Competent Person
  - 2.3.1 Design scaffold assemblies up to 125 feet.
  - 2.3.2 Supervise and direct the erection, dismantling, moving, and alteration of scaffolding.
  - 2.3.4 Inspect scaffolding following assembly, before each work shift, and after any event that could affect the structural integrity of the scaffold.
  - 2.3.6 Determine the feasibility and safety of providing fall protection for qualified employees erecting/dismantling supported scaffolds or develop a fall protection plan.
  - 2.3.7 Make decisions regarding safe access and scaffold integrity.



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### 2.4 Qualified Person

2.4.1 Responsible for engineering design and application of scaffold where applicable within PPL Electric Utilities.

### 2.5 Employee Users

2.5.1 Scaffolding shall be erected, moved, dismantled and altered only under the supervision and direction of a competent person.

### 2.6 Scaffold Inspector

2.6.1 Responsible for performing routine, each shift or periodic, inspections, on tube & clamp, fabricated frame and systems scaffolding used for maintenance and construction activities after the scaffold was initially inspected by a Competent Person.

## 3.0 APPLICABILITY

3.1 This procedure is to establish safety requirements when erecting/ dismantling/ use/inspecting of scaffolding, in order to mitigate the risk of a safety impact concern posed by scaffolding as a temporary structure and there by satisfying the OSHA requirements.

## 4.0 TERMS AND DEFINITIONS

4.1 **Adjustable Suspension Scaffold** — A suspension scaffold equipped with a hoist(s) that can be operated by an employee(s) on the scaffold.

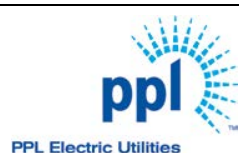
4.2 **Approved Fall Protection System (AFPS)** – Includes guardrail system, travel restraint system, and/or personal fall arrest system. In situations where the use of such devices is applicable, safety net system and/or positioning device system are also included.

4.3 **Bearer (putlog)** — A horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles, and similar members.

4.4 **Brace** — A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

4.5 **Cleat** — A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

4.6 **Competent Person** — One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measure to eliminate them.

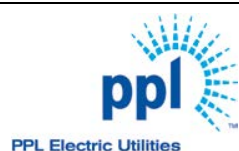


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- 4.7 **Coupler** — A device for locking together the tubes of a tube and coupler scaffold.
- 4.8 **Double Pole (independent pole) Scaffold** — A supported scaffold consisting of a platform(s) resting on cross beams (bearers) supported by ledgers and a double row of uprights independent of support (except ties, guys, braces) from any structure.
- 4.9 **Equivalent** — Alternative designs, materials or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.
- 4.10 **Energized Equipment** — Electrical power lines which are accessible to employees and which are not shielded from contact. Such lines do not include extension cords or power tool cords.
- 4.11 **Erector** — An employee who erects, repairs and maintains scaffold.
- 4.12 **Fabricated Decking and Planking** — Manufactured platforms made of wood (including laminated wood and solid sawn wood planks), metal or other materials.
- 4.13 **Fabricated Frame Scaffold (tubular welded frame scaffold)** — A scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.
- 4.14 **Failure** — Load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- 4.15 **Guardrail System** — A vertical barrier, consisting of a platform supported by brackets attached to framework.
- 4.16 **Hoist** — A manual or power-operated mechanical device to raise or lower a suspended scaffold.
- 4.17 **Horse Scaffold** — A supported scaffold consisting of a platform supported by construction horses (saw horses). Horse scaffolds constructed of metal are sometimes known as trestle scaffolds.
- 4.18 **Independent Pole Scaffold** — (See “Double Pole Scaffold”.)
- 4.19 **Ladder Stand** — A mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs.
- 4.20 **Landing** — A platform at the end of a flight of stairs.

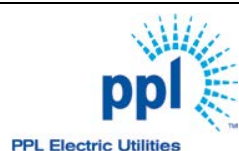




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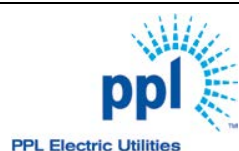
- 4.21 **Large Area Scaffold** — A pole scaffold, tube and coupler scaffold, systems scaffold, or fabricated frame scaffold erected over substantially the entire work area. For example: a scaffold erected over the entire floor area of a room.
- 4.22 **Lifeline** — A component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorage at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- 4.23 **Lower Levels** — Areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.
- 4.24 **Maximum Intended Load** — The total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.
- 4.25 **Mobile Scaffold** — A powered or unpowered, portable, caster or wheel-mounted supported scaffold.
- 4.26 **Open Sides and Ends** — The edges of a platform that are more than 14 inches (36 cm) away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of access. Exception: For plastering and lathing operations the horizontal threshold distance is 18 inches (46 cm).
- 4.27 **Personal Fall Arrest System** — A system used to arrest an employee's fall. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.
- 4.28 **Platform** — A work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.
- 4.29 **Pole Scaffold** — See definitions for "Single-Pole Scaffold" and "Double (Independent) Pole Scaffold".
- 4.30 **Qualified Person** — One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.
- 4.31 **Rated Load** — The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.
- 4.32 **Runner (ledger or ribbon)** — The lengthwise horizontal spacing or bracing member which may support the bearers.



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- 4.33 **Scaffold** — Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.
- 4.34 **Scaffold Inspector** — One who performs routine, (each shift or periodic), inspections required on scaffold used for Maintenance or Construction activities. They are competent to perform inspections only on scaffolds that have been initially inspected by a Competent Person.
- 4.35 **Self-Contained Adjustable Scaffold** — A combination supported and suspension scaffold consisting of an adjustable platform(s) mounted on an independent supporting frame(s) not a part of the object being worked on, and which is equipped with a means to permit the raising and lowering of the platform(s). Such systems include rolling roof rigs, rolling outrigger systems, and some masons' adjustable supported scaffolds.
- 4.36 **Single-Pole Scaffold** — A supported scaffold consisting of a platform(s) resting on bearers, the outside ends of which are supported on runners secured to a single row of posts or uprights, and the inner ends of which are supported on or in a structure or building wall.
- 4.37 **Stair Tower (Scaffold Stairway/Tower)** — A tower comprised of scaffold components and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.
- 4.38 **Stall Load** — The load at which the prime mover of a power-operated hoist stalls or the power to the prime-mover is automatically disconnected.
- 4.39 **Straight Run Scaffold (Run Scaffold)** — A two-point or multi-point adjustable suspension scaffold constructed using a series of interconnected braced scaffold members or supporting structures erected to form a continuous scaffold.
- 4.40 **Supported Scaffold** — One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.
- 4.41 **System Scaffold** — A scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels.
- 4.42 **Toe-board** — A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, ramp or scaffold to prevent materials from falling.
- 4.43 **Tube and Coupler Scaffold** — A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.



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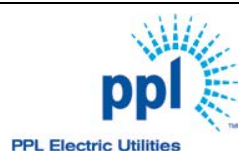
- 4.44 ***Tubular Welded Frame Scaffold*** — (see "Fabricated Frame Scaffold").
- 4.45 ***Unstable Objects*** — Items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, loose brick, and concrete blocks.
- 4.46 ***User*** — Any employee who accesses a scaffold.
- 4.47 ***Walkway*** — A portion of a scaffold platform used only for access and not as a work level.

## 5.0 MAIN BODY

### 5.1 General Information

- 5.1.1 All scaffolds shall be equipped with a handrail, midrail and toeboard. Handrail height shall be 42 inches to 45 inches. If these requirements are not met, the scaffold is considered as a temporary work platform and fall protection is required.
- 5.1.2 When erecting scaffolds, a barricade shall be used to keep other personnel from walking into the immediate area.
- 5.1.3 Means of access/egress shall not be more than 50 feet from the farthest point.
- 5.1.4 General Safety Guidelines:
  - a. Check to ensure that all ties are positive type ties and are located as close as possible to the posts.
  - b. Check to ensure that all frames are securely fastened together.
  - c. Check to ensure that the material used to enclose the scaffold is fastened to the frame and not the cross-braces.
  - d. Check to ensure the scaffold is properly ventilated to prevent toxic air.
  - e. If number 9-wire is used, check to ensure the ties have at least four strands.
  - f. Check ties at regular interval, especially after a heavy wind.
  - g. Additional horizontal diagonal bracing and additional tie-in locations will be necessary.

### 5.2 **"Capacity"**



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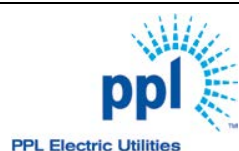
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- 5.2.1 Each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least four times the maximum intended load without failure.
- 5.2.2 The stall load of any scaffold hoist shall not exceed 3 times its rated load.
- 5.2.3 Scaffolds shall be designed (drawings and specifications) by a qualified person and shall be constructed and loaded in accordance with that design. See Attachment A for design criteria.

### 5.3 **“Scaffold Platform Construction”**

- 5.3.1 Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports as follows:
  - a. Each platform unit (e.g., scaffold plank, fabricated plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).
  - b. The platform shall be planked or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9-1/2 inches.

**NOTE:** The requirement to provide full planking or decking does not apply to platforms used solely as walkways or solely by employees performing scaffold erection or dismantling.
- 5.3.2 Scaffold platform and walkway shall be at least 18 inches wide. Where scaffold platforms and walkways cannot be at least 18 inches wide. The employees on those platforms and walkways shall be protected from fall hazards by the use of guardrails and/or personal fall arrest systems. There is no minimum width requirement for boatswains' chairs.
- 5.3.3 The front edge of all platforms shall not be more than 14 inches from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used.
  - a. The maximum distance from the face for outrigger scaffolds shall be 3 inches.
- 5.3.4 Each end of a platform unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches.

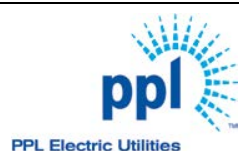


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- 5.3.5 Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches unless the platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.
- 5.3.6 Each platform greater than 10 feet in length shall not extend over its support more than 18 inches, unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.
- 5.3.7 On scaffolds where scaffold planks are abutted to create a long platform, each abutted end shall rest on a separate support surface. This provision does not preclude the use of common support members, such as "T" sections, to support abutting planks, or hook on platforms designed to rest on common supports.
- 5.3.8 On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed together or otherwise restrained to prevent movement.
- 5.3.9 At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.
- 5.3.10 Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.
- 5.3.11 Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.
- 5.3.12 Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component to a level below that required.

### **5.4 "Criteria for Supported Scaffolds"**



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- 5.4.1 Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:
  - a. Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.
  - b. Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less, and every 26 feet or less thereafter for scaffolds greater than 3 feet wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (measured from one end [not both] towards the other).
  - c. Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.
- 5.4.2 Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mudsills or other adequate firm foundation.
- 5.4.3 Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
- 5.4.4 Unstable objects shall not be used to support scaffolds or platform units.
- 5.4.5 Unstable objects shall not be used as working platforms.
- 5.4.6 Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.
- 5.4.7 Forklifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the forklift is not moved horizontally while the platform is occupied.
- 5.4.8 Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

### **5.5 "Access"**

This paragraph applies to scaffold access for all employees to perform work. Access requirements for employees erecting or dismantling supported scaffolds are specifically addressed in Section 5.5.9.

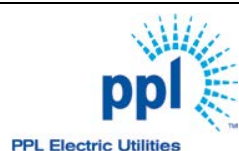




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- 5.5.1 When scaffold platforms are more than 2 feet above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Crossbraces shall not be used as a means of access.
- a. The employer shall provide safe passage to all scaffold access points. Ramps, walkways, etc. may be required if safe passage cannot be obtained.
- 5.5.2 Portable, hook-on and attachable ladders
- a. Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold.
- b. Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.
- c. When hook-on and attachable ladders are used on a supported scaffold more than 35 feet high, they shall have rest platforms at 35-foot maximum vertical intervals.
- d. Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used.
- e. Hook-on and attachable ladders shall have a minimum rung length of 11 1/2 inches.
- f. Hook-on and attachable ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16 3/4 inches.
- 5.5.3 Stairway-type ladders
- a. Be positioned such that their bottom step is not more than 24 inches above the scaffold supporting level.
- b. Be provided with rest platforms at 12-foot maximum vertical intervals.
- c. Have a minimum step width of 16 inches, except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 1/2 inches.
- d. Have slip-resistant treads on all steps and landings.
- 5.5.4 Stair towers (scaffold stairway/towers):
- a. A stair rail consisting of a top rail and a midrail shall be provided on each side of each scaffold stairway.
- b. The top rail of each stair rail system shall also be capable of serving as a handrail, unless a separate handrail is provided.
- c. Handrails and top rails that serve as handrails, shall provide an adequate handhold for employees grasping them to avoid falling.



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- d. Stair rail systems and handrails shall be surfaced to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.
- e. The ends of stair rail systems and handrails shall be constructed so that they do not constitute a projection hazard.
- f. Handrails and top rails that are used as handrails, shall be at least 3 inches from other objects.
- g. Stair rails shall be not less than 28 inches nor more than 37 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- h. A landing platform at least 18 inches wide by at least 18 inches long shall be provided at each level.
- i. Each scaffold stairway shall be at least 18 inches wide between stair rails.
- j. Treads and landings shall have slip resistant surfaces.
- k. Stairways shall be installed between 40 degrees and 60 degrees from the horizontal.
- l. Guardrails meeting the requirements of this section shall be provided on the open sides and ends of each landing.
- m. Riser height shall be uniform, within 1/4 inch, (0.6 cm) for each flight of stairs. Greater variations in riser height are allowed for the top and bottom steps of the entire system, not for each flight of stairs.
- n. Tread depth shall be uniform, within 1/4 inch, for each flight of stairs.

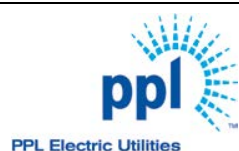
**5.5.5 Ramps and Walkways**

- a. Ramps and walkways 4 feet or more above lower levels shall have guardrail systems.
- b. No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).
- c. If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches apart which are securely fastened to the planks to provide footing.

**5.5.6 Integral prefabricated scaffold access frames shall:**

- a. Be specifically designed and constructed for use as ladder rungs.
- b. Have a rung length of at least 8 inches.
- c. Not be used as work platforms when rungs are less than 11-1/2 inches in length, unless each affected employee uses fall protection, or a positioning device, which complies with Fall Protection Safety Procedure.

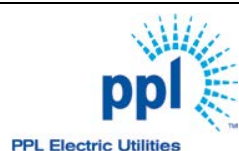




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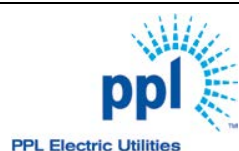
- d. Be uniformly spaced within each frame section.
  - e. Be provided with rest platforms at 35-foot maximum vertical intervals on all supported scaffolds more than 35 feet high.
  - f. Have a maximum spacing between rungs of 16 3/4 inches. Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16-3/4 inches.
- 5.5.7 Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.
- 5.5.8 Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surface.
- 5.5.9 Access for employees erecting or dismantling supported scaffolds.
- a. The employer shall provide safe means of access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.
  - b. Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.
  - c. When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.
  - d. Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.
- 5.6 **"Use"**
- 5.6.1 Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.
- 5.6.2 The use of shore or lean-to scaffolds is prohibited.
- 5.6.3 Scaffolds and scaffold components shall be inspected for visible defects by a competent person or scaffold inspector before each work shift, and after any occurrence which could affect a scaffold's structural integrity. (Reference 9.1)



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- 5.6.4 Any part of a scaffold damaged or weakened such that its strength is less than that required by Section 6.1 of this section shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.
- 5.6.5 Scaffolds shall not be moved horizontally while employees are on them.
- 5.6.6 Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized equipment than the established safe working distances.
- 5.6.7 Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees.
- 5.6.8 Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.
- 5.6.9 Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.
- 5.6.10 Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Windscreens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.
- 5.6.11 Debris/tools/equipment shall not be allowed to accumulate on platforms.
- 5.6.12 Makeshift devices, such as but not limited to boxes and barrels, work benches, shall not be used on top of scaffold platforms to increase the working level height of employees.
- 5.6.13 Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds under the direction of a competent person satisfying the following criteria:
  - a. When the ladder is placed against a structure which is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder.
  - b. The platform units shall be secured to the scaffold to prevent their movement.



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- c. The ladder legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection.
- d. The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

5.6.14 Platforms shall not deflect more than 1/60 of the span when loaded.

**5.7 "Fall Protection"**

- 5.7.1 Each employee on a scaffold more than 4 feet above a lower level shall be protected from falling through the use of appropriate Fall Protection measures.
  - a. Each employee on a boatswains' chair, catenary scaffold, float scaffold, needle beam scaffold, or ladder jack scaffold shall be protected by a personal fall arrest system.
  - b. Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound top rail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound top rail capacity) when the platform is supported by ropes.
  - c. Each employee on a walkway located within a scaffold shall be protected by a guardrail system (with minimum 200 pound top rail capacity) installed within 9-1/2 inches of and along at least one side of the walkway.
  - d. Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system or guardrail system (with minimum 200 pound top rail capacity).
  - e. For all scaffolds not otherwise specified in this section, each employee shall be protected by the use of an approved fall protection system.
- 5.7.2 Employees are required to use fall protection while erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard, as determined by the competent person.
- 5.7.3 Personal fall arrest systems used on scaffolds shall be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member or other appropriate anchorage point. Vertical lifelines shall not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.



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- a. When vertical lifelines are used, they shall be fastened to a fixed anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion. Generally, safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.
- b. When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold. Horizontal lifelines shall not be attached only to the suspension ropes.
- c. When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines shall be equal in number and strength to the suspension ropes.
- d. Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

**5.7.4** Guardrail systems installed shall meet the requirements of this section.

- a. Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crews.
- b. The top edge height of top rails or equivalent member on supported scaffolds and suspended scaffolds shall be installed between 38 inches and 45 inches above the platform surface.
- c. When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.
- d. When midrails are used, they shall be approximately halfway between the walking/working surface and the top rail.
- e. When screens and mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.



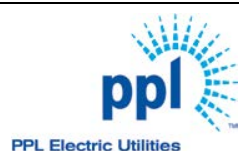
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- f. When intermediate members (such as balusters or additional rails) are used, they shall not be more than 19 inches apart.
- g. Each top rail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along its top edge of at least 100 pounds for guardrail systems installed on single-point adjustable suspension scaffolds or two-point adjustable suspension scaffolds, and at least 200 pounds for guardrail systems installed on all other scaffolds.
- h. When the loads are applied in a downward direction, the top edge shall not drop below the height above the platform surface that is prescribed in Section 6.7.4 (b).
- i. Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least 75 pounds for guardrail systems with a minimum 100 pound top rail capacity, and at least 150 pounds for guardrail systems with a minimum 200 pound top rail capacity.
- j. Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- k. The ends of all rails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.
- l. Steel or plastic banding shall not be used as a top rail or midrail.
- m. Manila or plastic (or other synthetic) rope being used for top rails or midrails shall be inspected by a competent person as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (g) of this section.
- n. Crossbracing is acceptable in place of a midrail when the crossing point of two braces is between 20 inches and 30 inches above the work platform or as a top rail when the crossing point of two braces is between 38 inches and 48 inches above the work platform. The end points at each upright shall be no more than 48 inches apart.

**5.8     “Falling Object Protection”**

- 5.8.1 In addition to wearing hard hats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, such objects shall be



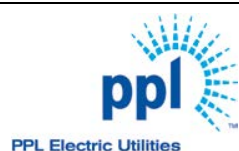
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placed away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

- 5.8.2 Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:
- a. The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area.
  - b. A toeboard shall be erected along the edge of platforms more than 10 feet above lower levels for a distance sufficient to protect employees below, except on float (ship) scaffolds where an edging of 3/4 x 1 1/2 inch wood or equivalent may be used in lieu of toeboards.
  - c. Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below.
  - d. A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects.
  - e. A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.
- 5.8.3 Canopies, when used for falling object protection, shall comply with the following criteria:
- a. Canopies shall be installed between the falling object hazard and the employees.
  - b. When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.
  - c. Independent support lines and suspension ropes shall not be attached to the same points of anchorage.
- 5.8.4 Toeboards
- a. Capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toeboard.
  - b. At least three and one-half inches high from the top edge of the toeboard to the level of the walking/working surface. Toeboards shall be securely fastened in place at the outermost edge of the





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platform and have not more than 1/4-inch clearance above the walking/working surface. Toeboards shall be solid or with openings not over one inch in the greatest dimension.

- 5.9 Requirements For Specific Types Of Scaffold -- (Reference: Attachment A - Scaffold Specification Guidelines)

### **"Pole Scaffolds"**

- 5.9.1 When platforms are being moved to the next level, the existing platform shall be left undisturbed until the new bearers have been set in place and braced, prior to receiving the new platforms.
- 5.9.2 Cross-bracing shall be installed between the inner and outer sets of poles on double pole scaffolds.
- 5.9.3 Diagonal bracing in both directions shall be installed across the entire inside face of double-pole scaffolds used to support loads equivalent to a uniformly distributed load of 50 pounds or more per square foot.
- 5.9.4 Diagonal bracing in both directions shall be installed across the entire outside face of all double-and single-pole scaffolds.
- 5.9.5 Runners and bearers shall be installed on edge.
- 5.9.6 Bearers shall extend a minimum of 3 inches over the outside edges of runners.
- 5.9.7 Runners shall extend over a minimum of two poles, and shall be supported by bearing blocks securely attached to the poles.
- 5.9.8 Braces, bearers, and runners shall not be spliced between poles.
- 5.9.9 Where wooden poles are spliced, the ends shall be squared and the upper section shall rest squarely on the lower section. Wood splice plates shall be provided on at least two adjacent sides, and shall extend at least 2 feet (0.6 m) on either side of the splice, overlap the abutted ends equally and have at least the same cross-sectional areas as the pole. Splice plates of other materials of equivalent strength may be used.
- 5.9.10 Pole scaffolds over 60 feet in height shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with that design. Attachment A contains examples of criteria that will enable employees to comply with design and loading requirements for pole scaffolds less than 60 feet in height.

- 5.10 **"Tube and Coupler Scaffolds"**

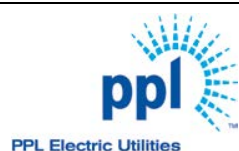


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- 5.10.1 When platforms are being moved to the next level, the existing platform shall be left undistributed until the new bearers have been set in place and braced prior to receiving the new platforms.
- 5.10.2 Transverse bracing forming and "X" across the width of the scaffold shall be installed at the scaffold ends and at least every third set of posts horizontally (measured from only one end) and every fourth runner vertically. Bracing shall extend diagonally from the inner or outer posts or runners upward to the next outer or inner posts or runners. Building ties shall be installed at the bearer levels between the transverse bracing and shall conform to the requirements of 6.3.1.
- 5.10.3 On straight run scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the scaffold at approximately a 45 degree angle. On scaffolds whose length is greater than their height, such bracing shall be repeated beginning at least at every fifth post. On scaffolds whose length is less than their height, such bracing shall be installed from the base of the end posts upward to the opposite end posts, and then in alternating directions until reaching the top of the scaffold. Bracing shall be installed as close as possible to the intersection of the bearer and post or runner post.
- 5.10.4 Where conditions preclude the attachment of bracing to posts, bracing shall be closely attached to the runners.
- 5.10.5 Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible.
- 5.10.6 Bearers shall extend beyond the posts and runners, and shall provide full contact with the coupler.
- 5.10.7 Runners shall be installed along the length of the scaffold, located on both the inside and outside posts at level heights (when tube and coupler guardrails and midrails are used on outside posts, they may be used in lieu of outside runners).
- 5.10.8 Runners shall be interlocked on straight runs to form continuous lengths, and shall be coupled to each post. The bottom runners and bearers shall be located as close to the base as possible.
- 5.10.9 Couplers shall be of structural metal, such as drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.
- 5.10.10 Tube and coupler scaffolds over 125 feet in height shall be designed by a registered professional engineer, and shall be constructed and loaded in





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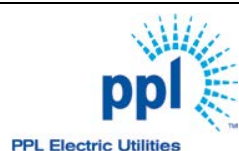
accordance with such design. Attachment A to this subpart contains examples of criteria that will enable an employee to comply with design and loading requirements for tube and coupler scaffolds less than 125 feet in height.

### 5.11 **“Fabricated Frame Scaffolds” (tubular welded frame scaffolds)**

- 5.11.1 When moving platforms to the next level, the existing platform shall be left undisturbed until the new end frames have been set in place and braced prior to receiving the new platforms.
- 5.11.2 Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.
- 5.11.3 Frames and panels shall be joined together vertically by coupling or stacking pins or equivalent means.
- 5.11.4 Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.
- 5.11.5 Brackets used to support cantilevered loads shall:
  - a. Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames.
  - b. Not be bent or twisted from these positions.
  - c. Be used only to support personnel, unless the scaffold has been designed for other loads by a qualified engineer and built to withstand the tipping forces caused by those other loads being placed on the bracket-supported section of the scaffold.
- 5.11.6 Scaffolds over 125 feet in height above their base plates shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with such design.

### 5.12 **“Horse Scaffolds”**

- 5.12.1 Scaffolds shall not be constructed or arranged more than two tiers or 10 feet in height, whichever is less.
- 5.12.2 When horses are arranged in tiers, each horse shall be placed directly over the horse in the tier below.
- 5.12.3 When horses are arranged in tiers, the legs of each horse shall be nailed down or otherwise secured to prevent displacement.



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5.12.4 When horses are arranged in tiers, each tier shall be crossbraced.

**5.13 "Mobile Scaffolds"**

5.13.1 Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

- a. Scaffolds constructed of tube and coupler components shall also comply with the requirements of Section 7.2 of this section.
- b. Scaffolds constructed of fabricated frame components shall also comply with the requirements of Section 7.3.

5.13.2 Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.

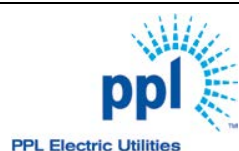
5.13.3 Manual force used to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet above the supporting surface.

5.13.4 Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.

5.13.5 Scaffolds shall be stabilized to prevent tipping during movement.

Employees shall not be allowed to ride on scaffolds, unless the following conditions exist:

- a. The surface on which the scaffold is being moved is within 3 degrees of level, and free of pits, holes, and obstructions.
- b. The height to base width ratio of the scaffold during movement is two to one or less, unless the scaffold is designed and constructed to meet or exceed nationally recognized stability test requirements such as those listed in paragraph (x) of Attachment A to this subpart (ANSI/SIA A92.5 and A92.6).
- c. Outrigger frames, when used, are installed on both sides of the scaffold.
- d. When power systems are used, the propelling force is applied directly to the wheels, and does not produce a speed in excess of 1 foot per second (.3 mps).



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- e. No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
- 5.13.6 Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.
- 5.13.7 Where leveling of the scaffold is necessary, screw jacks or equivalent means shall be used.
- 5.13.8 Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
- 5.14 **"Other types of scaffold regulated by OSHA"** include the following:
  - 5.14.1 Bricklayers' Square Scaffold
  - 5.14.2 Roof Bracket Scaffolds
  - 5.14.3 Outrigger Scaffolds
  - 5.14.4 Pump Jack Scaffolds
  - 5.14.5 Ladder Jack Scaffolds
  - 5.14.6 Step, Platform, and Trestle Ladder Scaffolds
- Note:** See current OSHA regulations for requirements applicable to these specific scaffolds.
- 5.15 **Training**
  - 5.15.1 Completion of the Fall Protection Training Program is required to access specific types of scaffolding and scaffolding structures.
  - 5.15.2 Each employee who performs work while on a scaffold shall be trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall include the following areas, as applicable:
    - a. The nature of any electrical hazards, fall hazards and falling object hazards in the work area.
    - b. The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.
    - c. The proper use of the scaffold, and the proper handling of materials on the scaffold.
    - d. The maximum intended load and the load-carrying capacities of the scaffolds used.



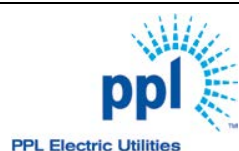
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- 5.15.3 The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a competent person to recognize any hazards associated with the work in question. The training shall include the following topics, as applicable:
- a. The nature of scaffold hazards.
  - b. The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question.
  - c. The design criteria maximum intended load-carrying capacity and intended use of the scaffold.
- 5.15.4 When the employer has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the employer shall retrain each such employee so that the requisite proficiency is regained. Retraining is required in at least the following situations:
- a. Where changes at the worksite present a hazard about which an employee has not been previously trained.
  - b. Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.
  - c. Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.
- 5.15.5 Each employee who performs the work of a competent person shall be trained as one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. The training shall include the following areas, as applicable.

Identify and correct hazards encountered in scaffold work.

- a. Structural integrity of scaffolds and the procedures needed to maintain them.
- b. Evaluate the effects of such potential damage-causing occurrences.
- c. Scaffolding inspection requirements.
- d. Scaffold erection, moving, dismantling or alteration activities.
- e. Determine the feasibility of providing fall protection.



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- 5.15.6 Employees who perform routine, (each shift or periodic), inspections on Tube & Clamp, Fabricated Frame, and Systems Scaffoldings shall be trained to perform the inspections after the scaffold was initially inspected by a Competent Person.

### **5.16 Scaffold Inspection Requirements**

- 5.16.1 Scaffolds and scaffold components shall be inspected by a competent person following the initial erection. The scaffold cannot be used until that inspection is current and completed. Competent person shall complete and attach a Scaffold Inspection Tag (Attachment D) at every scaffold access point.

Scaffolds and scaffold components shall be inspected for visible defects by a “Competent Person” or a “Scaffolding Inspector” before each work shift, and after any occurrence which could affect a scaffold’s structural integrity. The competent person or scaffold inspector shall record their signatures, date and time on the inspection tag when inspection tags are filled, additional tags may be added at each access point. All tags must remain attached to access points until the scaffold has been dismantled at which time all scaffold inspection tags maybe discarded.

- 5.16.2 Additional scaffold tags and or signs may be attached for the purpose of identifying a specific hazard or condition on the scaffold. For example, scaffold sign may state - “Personal Fall Arrest Equipment Required”.
- 5.16.3 Scaffold Inspection Checklist (Attachment C) - This is an inspection tool. It is not required to be utilized, but will provide guidance for the inspector.
- 5.16.4 All scaffolds shall be tagged and comply with OSHA standard 29 CFR 1926.200. As noted on Attachment D, inspection tag should display:
- Date erected
  - Name of person – Erected by
  - Competent Person Name – Inspected by
  - Loading Schedule and a check for complete items.
- 5.16.5 Any part of scaffolding that shows any sign of deterioration shall be immediately removed from service. No loose scaffolding material shall be allowed on any completed scaffold.

## **6.0 REFERENCES**

- 6.1 OSHA 29 CFR 1926.450, .451, .452, .454; 1910.28, SUBPART L & M, 1926.502.
- 6.2 OSHA 29 CFR 1910 Subpart D – Walking-Working Surfaces



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6.3 OSHA 29 CFR 1926.451 – Additional requirements applicable to specific types of scaffolds

6.3 PPL Electric Utilities Safety Rule Book

### **7.0 REGULATORY REQUIREMENTS**

7.1 OSHA, SUBPART L, 1926.450, .451, .452, .454; 1910.28, SUBPART M, 1926.502.

### **8.0 TRAINING / SAFETY**

8.1 PPL EU Safety Rule Book

8.2 MST (Mandated Safety Training) – 741 – Scaffold Competent Person

8.3 MST (Mandated Safety Training) – 742 – Scaffold Erector/Dismantler

8.4 MST (Mandated Safety Training) – 743 – Scaffold Inspector

8.5 MST (Mandated Safety Training) – 745 – Fall Protection and Scaffold User - Donning a Full Body Harness

### **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

### **10.0 ATTACHMENTS**

ATTACHMENT A – Scaffold Specifications Guidelines

ATTACHMENT B – Various Scaffold Types Used in Construction

ATTACHMENT C – Scaffold Inspection Checklist

ATTACHMENT D – Scaffold Inspection Tags

ATTACHMENT E – Wind Force Information

ATTACHMENT F – Lumber Grading

### **11.0 RECORD RETENTION**

11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

11.2 This document shall be reviewed every 5 years by the Electric Utilities Safety Operations.

11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



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## **12.0 RECORD OF REVISIONS**

<b>Rev</b>	01	<b>Date</b>	01/17/2017	<b>Effective</b>	3/17/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Frank Feddor, TD&I Training Specialist, and Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with OSHA 29 CFR 1910 Subpart D (Walking/Working Surfaces).			

<b>Rev</b>	00	<b>Date</b>	05/28/2013	<b>Effective</b>	06/03/2013
<b>Prepared by:</b>		Jacque Creamer. Project Manager Safety & Health			
<b>Reviewed by:</b>		Safety Professionals: Adam Frederick, Richard Horan, Jeff Monsell, Brian Kostik			
<b>Approved by:</b>		Barry Downes, Manager-Safety			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure.			





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**ATTACHMENT A**

**SCAFFOLD SPECIFICATIONS GUIDELINES**

1. General Guidelines and Tables

- (a) The following tables, and the tables in Part 2 -- Specific guidelines and tables, assume that all load-carrying timber members (except planks) of the scaffold are a minimum of 1,500 lb-f/in(2) (stress grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Softwood Lumber Standards, dated January 1970, except that, where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements.
- (b) Solid sawn wood used as scaffold planks shall be selected for such use following the grading rules established by a recognized lumber grading association or by an independent lumber grading inspection agency. Such planks shall be identified by the grade stamp of such association or agency. The association or agency and the grading rules under which the wood is graded shall be certified by the Board of Review, American Lumber Standard Committee, as set forth in the American Softwood Lumber Standard of the U.S. Department of Commerce.
  - (i) Allowable spans shall be determined in compliance with the National Design Specification for Wood Construction published by the National Forest Products Association; paragraph 5 of ANSI A10.8-1988 Scaffolding-Safety Requirements published by the American National Standards Institute; or for 2 x 10 inch (nominal) or 2 x 9 inch (rough) solid sawn wood planks, as shown in the following table:

Maximum intended nominal load (lb/ft (2))	Maximum permissible span using full thickness undressed lumber (ft)	Maximum permissible span using nominal thickness lumber (ft)
25	10	8
50	8	6
75	6	

- (ii) The maximum permissible span for 1 1/4 x 9-inch or wider wood plank of full thickness with a maximum intended load of 50 lb/ft.(2) shall be 4 feet.





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- (c) Fabricated planks and platforms may be used in lieu of solid sawn wood planks. Maximum spans for such units shall be as recommended by the manufacturer based on the maximum intended load being calculated as follows:

Rated Load Capacity	Intended Load
Light-duty	* 25 pounds per square foot applied uniformly over the entire span area.
Medium-duty	* 50 pounds per square foot applied uniformly over the entire span area.
Heavy-duty	* 75 pounds per square foot applied uniformly over the entire span area.
One-person	* 250 pounds placed at the center of the span (total 250 pounds)
Two-person	* 250 pounds placed 18 inches to the left and right of the center of the span (total 500 pounds)
Three-person	* 250 pounds placed at the center of the span and 250 pounds placed 18 inches to the left and right of the center of the span (total 750 pounds)

Note: Platform units used to make scaffold platforms intended for light-duty use shall be capable of supporting at least 25 pounds per square foot applied uniformly over the entire unit-span area, or a 250-pound point load placed on the unit at the center of the span, whichever load produces the greater shear force.

- (d) Guardrails shall be as follows:
- (i) Toprails shall be equivalent in strength to 2 inch by 4 inch lumber; or
    - 1 1/4 inch x 1/8 inch structural angle iron; or
    - 1 inch x .070 inch wall steel tubing; or 1.990 inch x .058 inch wall aluminum tubing.
  - (ii) Midrails shall be equivalent in strength to 1 inch by 6 inch lumber; or
    - 1 1/4 inch x 1 1/4 inch x 1/8 inch structural angle iron; or
    - 1 inch x .070 inch wall steel tubing; or
    - 1.990 inch x .058 inch wall aluminum tubing.
  - (iii) Toeboards shall be equivalent in strength to 1 inch by 4 inch lumber; or
    - 1 1/4 inch x 1 1/4 inch structural angle iron; or
    - 1 inch x .070 inch wall steel tubing; or
    - 1.990 inch x .058 inch wall aluminum tubing.



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- (iv) Posts shall be equivalent in strength to 2 inch by 4 inch lumber; or
  - 1 1/4 inch x 1 1/4 inch x 1/8 structural angle iron; or
  - 1 inch x .070 inch wall steel tubing; or
  - 1.990 inch x .058 inch wall aluminum tubing.
- (v) Distance between posts shall not exceed 8 feet.
- (e) Overhead protection shall consist of 2 inch nominal planking laid tight, or 3/4-inch plywood.
- (f) Screen installed between toeboards and midrails or top rails shall consist of No. 18 gauge U.S. Standard wire one inch mesh.



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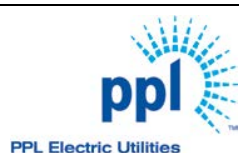
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### 2. Specific Guidelines and Tables.

#### (a) Pole Scaffolds.

**Single Pole Wood Pole Scaffolds**

	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intended load (lbs/ft (2))	25	25	50	75
Poles or Uprights	2 x 4 in.	4 x 4 in.	4 x 4 in.	4 x 6 in.
Maximum Pole Spacing (transverse)	6 feet	10 feet	8 feet	6 feet
Runners	1 x 4 in.	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.
Bearers and maximum spacing of bearers:				
3 feet	2 x 4 in.	2 x 4 in.	2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
5 feet	2 x 6 in. or 3 x 4 in.	2 x 6 in. or 3 x 4 in.	2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
6 feet			2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
8 feet			2 x 10 in. or 3 x 4 in.	
Planking	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.	2 x 10 in.
Maximum vertical spacing of horizontal members	7 feet	9 feet	7 feet	6 ft. 6 in.
Bracing				
Horizontal	1 x 4 in.	1 x 4 in.	1 x 6 in. or 1 1/4 x 4 in.	2 x 4 in.
Bracing diagonal.	1 x 4 in.	1 x 4 in.	1 x 4 in.	2 x 4 in.
Tie-Ins	1 x 4 in.	1 x 4 in.	1 x 4 in.	1 x 4 in.



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Note: All members except planking are used on edge. All wood bearers shall be reinforced with 3/16 x 2 inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

## **Independent Wood Pole Scaffolds**

	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intended load	25 lbs/ft. (2)	25 lbs/ft. (2)	50 lbs/ft. (2)	75 lbs/ft/ (2)
Poles or Uprights	2 x 4 in.	4 x 4 in.	4 x 4 in.	4 x 4 in.
Maximum Pole Spacing (longitudinal)	6 feet	10 feet	8 feet	6 feet
Maximum (transverse)	6 feet	10 feet	8 feet	8 feet
Runners	1 1/4 x 4 in.	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.
Bearers and maximum spacing of bearers:				
3 feet	2 x 4 in.	2 x 4 in.	2 x 10 in.	2 x 10 in. (rough)
6 feet	2 x 6 in. or 3 x 4 in.	2 x 10 in. (rough) or 3 x 8 in.	2 x 10 in.	2 x 10 in. (rough)
8 feet	2 x 6 in. or 3 x 4 in.	2 x 10 in. (rough) or 3 x 8 in.	2 x 10 in.	
10 feet	2 X 6 in. or 3 x 4 in.	2 x 10 in. (rough) or 3 x 3 in.		
Planking	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.	2 x 10 in.
Maximum vertical spacing of horizontal members	7 feet	7 feet	6 feet	6 feet
Bracing				
Horizontal	1 x 4 in.	1 x 4 in.	1 x 6 in. or 1 1/4 x 4 in.	2 x 4 in.
Bracing diagonal.	1 x 4 in.	1 x 4 in.	1 x 4 in.	2 x 4 in.
Tie-Ins	1 x 4 in.	1 x 4 in.	1 x 4 in.	1 x 4 in.



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Note: All members except planking are used on edge. All wood bearers shall be reinforced with 3/16 x 2 inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

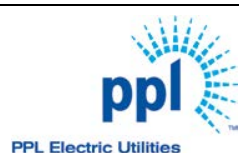
(b) Tube and coupler scaffolds.

## **Minimum Size of Members**

	Light Duty	Medium Duty	Heavy Duty
Maximum intended Load	25 lbs/ft (2)	50 lbs/ft (2)	75 lbs/ft (2)
Posts, runners and braces	Nominal 2 in. (1.90 inches) OD steel tube or pipe.	Nominal 2 in. (1.90 inches) OD steel tube or pipe	Nominal 2 in. (1.90 inches) OD steel tube or pipe
Bearers	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. x 10 ft.	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. x 7 ft. or Nominal 2 1/2 in. (2.375 in.) OD steel tube or pipe and a post spacing of 6 ft. x 8 ft. (*)	Nominal 2 1/2 in. (2.375 in.) OD steel tube or pipe and a maximum post spacing of 6 ft. x 6 ft.
Maximum runner spacing vertically	6 ft. 6 in.	6 ft. 6 in.	6 ft. 6 in.

Footnote (\*) Bearers shall be installed in the direction of the shorter dimension.

Note: Longitudinal diagonal bracing shall be installed at an angle of 45 deg. (+/- 5 deg.).



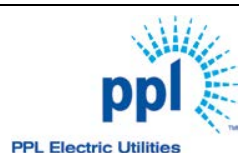
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## **Maximum Number of Planked Levels**

	Maximum Number of Additional Planked Levels			Maximum Height of Scaffold (in feet)
	Light Duty	Medium Duty	Heavy Duty	
Number of Working Levels:				
1	16	11	6	125
2	11	1	0	125
3	6	0	0	125
4	1	0	0	125

- (c) "Fabricated Frame Scaffolds." Because of their prefabricated nature, no additional guidelines or tables for these scaffolds are being adopted in this Attachment.
- (d) "Plasterers', Decorators', and Large Area Scaffolds." The guidelines for pole scaffolds or tube and coupler scaffolds (Attachment A (a) and (b)) may be applied.
- (e) "Bricklayers' Square Scaffolds."  
Maximum intended load: 50 lb/ft.(2)(\*)  
Footnote(\*) The squares shall be set not more than 8 feet apart for light duty scaffolds and not more than 5 feet apart for medium duty scaffolds.  
Maximum width: 5 ft.  
Maximum height: 5 ft.  
Gussets: 1 x 6 in.  
Braces: 1 x 8 in.  
Legs: 2 x 6 in.  
Bearers (horizontal members): 2 x 6 in.
- (f) Horse Scaffolds.  
Maximum intended load (light duty): 25 lb/ft.(2)(\*\*)  
Footnote(\*\*) Horses shall be spaced not more than 8 feet apart for light duty loads, and not more than 5 feet apart for medium duty loads.  
Maximum intended load (medium duty): 50 lb/ft.(2)(\*\*)  
Footnote(\*\*) Horses shall be spaced not more than 8 feet apart for light duty loads, and not more than 5 feet apart for medium duty-loads.  
Horizontal members or bearers:  
Light duty: 2 x 4 in.  
Medium duty: 3 x 4 in.  
Legs: 2 x 4 in.  
Longitudinal brace between legs: 1 x 6 in.  
Gusset brace at top of legs: 1 x 8 in.



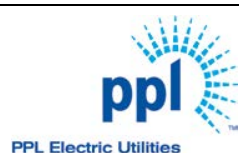
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Half diagonal braces: 2 x 4 in.

## **Schedule for Ladder-Type Platforms**

Length of Platform	12 feet	14 & 16 feet	18 & 20 feet
Side stringers, minimum cross section (finished sizes)			
At ends	1 3/4 x 2 3/4 in.	1 3/4 x 2 3/4 in.	1 3/4 x 3 in.
At middle	1 3/4 x 2 3/4 in	1 3/4 x 2 3/4 in.	1 3/4 x 4 in.
Reinforcing strip (minimum)	A 1/8 x 7/8 inch steel reinforcing strip shall be attached to the side or underside, full length.		
Rungs	Rungs shall be 1 1/8 inch minimum diameter with at least 7/8 inch in diameter tenons, and the maximum spacing shall be 12 inches to center.		
Tie Rods			
Number (minimum)	3	4	4
Diameter (minimum)	1/4 inch	1/4 inch	1/4 inch
Flooring, minimum finished size	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.



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## **Schedule for Ladder-Type Platforms**

Length of Platform	22 & 24 ft.	28 & 30 ft.
Side stringers, minimum cross section (finished sizes):		
At ends	1 3/4 x 3 in.	1 3/4 x 3 1/2 in.
At middle	1 3/4 x 4 1/4 in.	1 3/4 x 5 in.
Reinforcing strip (minimum)	A 1/8 x 7/8 inch steel reinforcing strip shall be attached to the side or underside, full length.	
Rungs	Rungs shall be 1 1/8 inch minimum diameter with at least 7/8 inch in diameter tenons, and the maximum spacing shall be 12 inches to center tie rods.	
Number (minimum)	5	6
Diameter (minimum)	1/4 in.	1/4 in.
Flooring, minimum finished size	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.

- (4) Plank-Type Platforms. Plank-type platforms shall be composed of not less than nominal 2 x 8 inch un-spliced planks, connected together on the underside with cleats at intervals not exceeding 4 feet, starting 6 inches from each end. A bar or other effective means shall be securely fastened to the platform at each end to prevent the platform from slipping off the hanger. The span between hangers for plank-type platforms shall not exceed 10 feet.
- (5) Beam-Type Platforms. Beam platforms shall have side stringers of lumber not less than 2 x 6 inches set on edge. The span between hangers shall not exceed 12 feet when beam platforms are used. The flooring shall be supported on 2 x 6 inch cross beams, laid flat and set into the upper edge of the stringers with a snug fit, at intervals of not more than 4 feet, securely nailed to the cross beams. Floor-boards shall not be spaced more than 1/2 inch apart.





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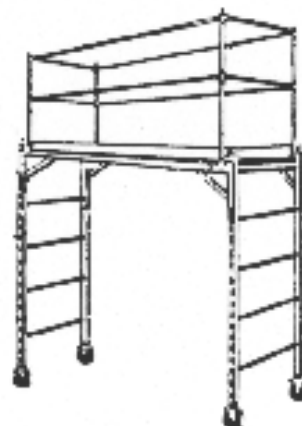
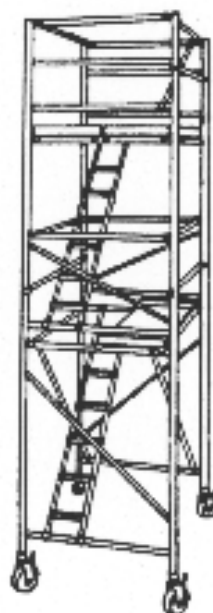
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**ATTACHMENT B**

**VARIOUS SCAFFOLD TYPES USED IN CONSTRUCTION**

The following illustrations are to be used only for identifying the various scaffold types commonly used in the construction industry. They are not intended as compliance guidelines and do not necessarily reflect the OSHA requirements.

**Prefabricated Mobile  
Tower Unit**

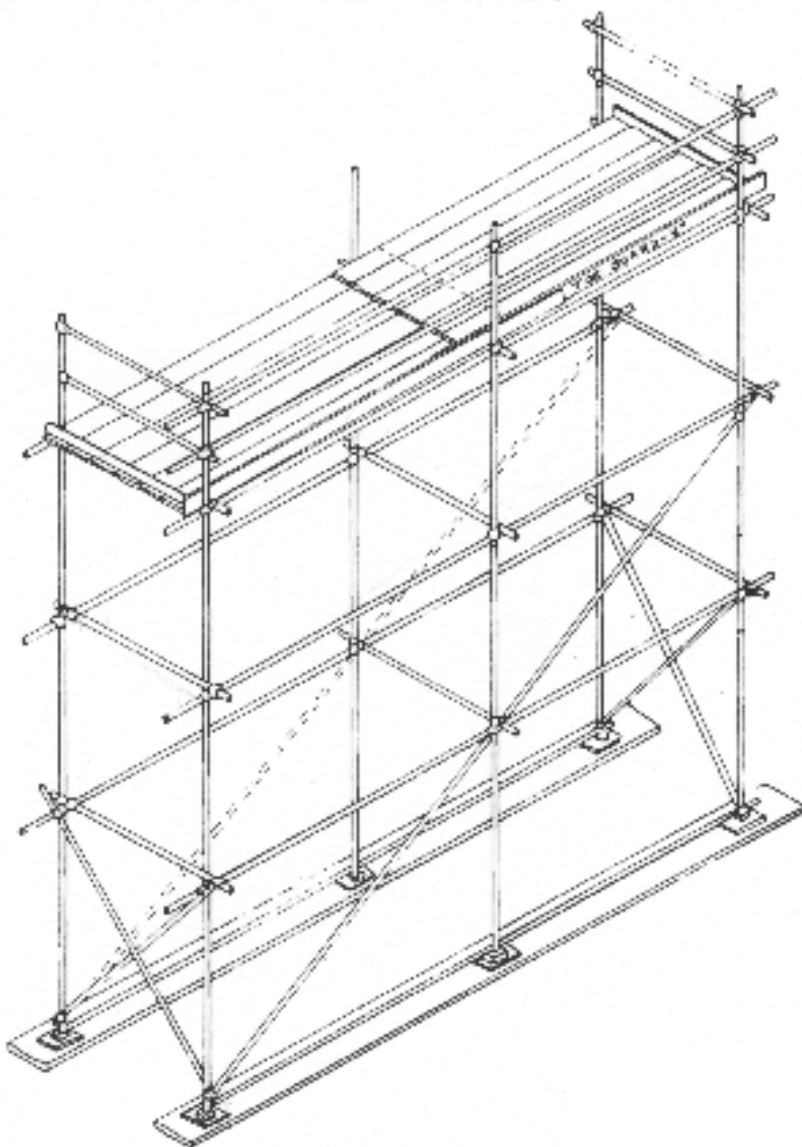




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**Tube and Coupler  
Scaffold**

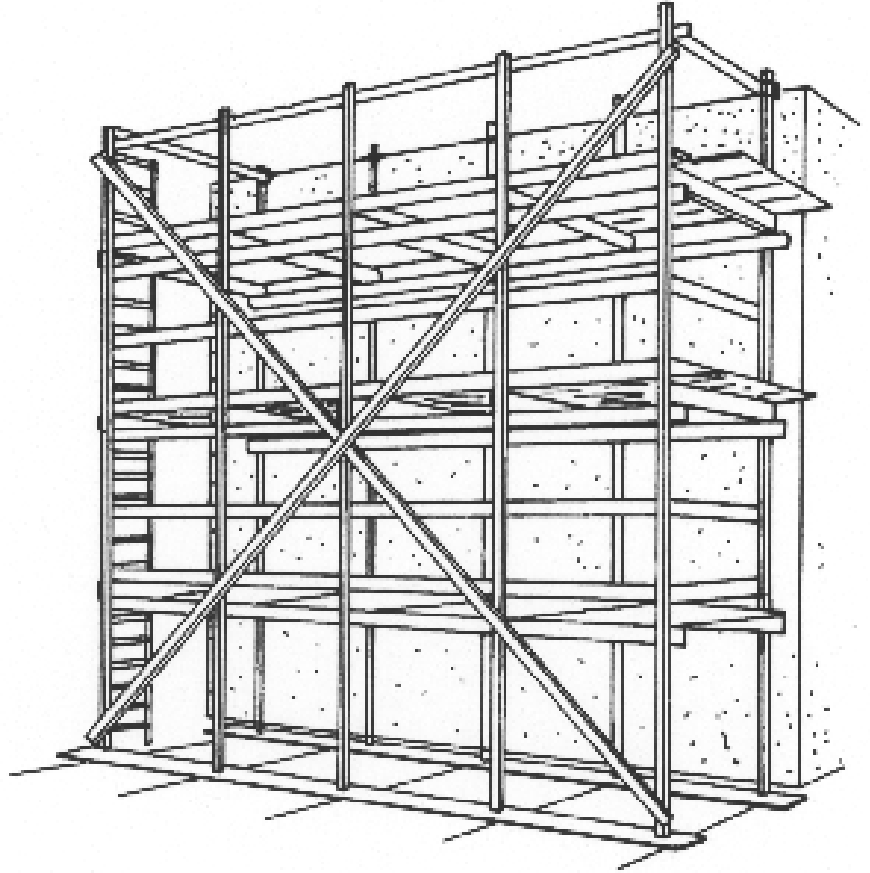


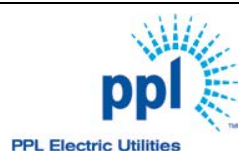


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**Wood Pole Scaffold**





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**ATTACHMENT C  
SCAFFOLD INSPECTION CHECKLIST**

		YES	NO	N/A
1.	Does scaffold have inspection tag(s) attached at all access points?			
2.	Has the scaffold been constructed and loaded in accordance with the design of a qualified person with a (load) safety factor of 4 to 1?			
3.	Has the scaffold platform been fully planked with less than 1 inch between planks or between planks and the uprights?			
4.	Where the employer can demonstrate the necessity, is the gap between the last plank and the uprights less than 9 1/2 inches?			
5.	Are all platforms at least 18 inches wide?			
6.	Are platforms that are less than 18 inches protected by guardrail systems?			
7.	Is a Guardrail & Midrail installed on all open sides of the scaffold that are greater than 14 inches from the work (Required on all scaffolds with a working/walking surface greater than 4 feet high.)			
8.	Where open sides of scaffolds are more than 14 inches will fall protection systems be used by all employees?			
9.	Are the platforms, planks, and pics properly marked with the grade stamp?			
10.	Are all platforms, pics or planks cleated, restrained by hooks or equivalent means, properly secured to the scaffold, or extending over the centerline of their supports by at least 6 inches?			
11.	Are wood platforms of 10 feet or less extending over their end supports no more than 12 inches?			
12.	Are abutted wood planks resting on separate support surfaces?			
13.	Where wood planks are overlapped are they lapped over the supports?			
14.	Are wood planks overlapped at least 12 inches, nailed together or otherwise secured?			
15.	Are wood planks that rest on the bearer at other than a 90-degree angle laid first?			
16.	Are the top and bottom surfaces of the plank visible and free from paint and other opaque finishes?			
17.	For scaffolds exceeding the 4 to 1 (minimum width to height) ratio, have the appropriate vertical/horizontal ties been installed as required?			
18.	Are scaffold Base Plates or Castors properly installed?			
19.	Are Screwjacks extended too less than 18 inches above the Base Plate?			
20.	Are scaffolds erected on adequate firm footings?			
21.	Is scaffold plumb and braced to prevent swaying or displacement?			
22.	Has safe access been provided for all scaffold platforms that are more than 2 feet above or below the point of access?			
23.	Is the bottom rung of the Ladder within 24 inches of the ground or "step-off" area?			



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		YES	NO	N/A
24.	Does the top of the ladder extend at least 36 inches above the walking/working surface?			
25.	Are rest platforms installed every 35 feet vertically?			
26.	Are the ladders specifically designed for use with the type of scaffold used and do rungs meet required design?			
27.	Are scaffolds and components loaded within their rated capacities?			
28.	Does scaffold show any sign of visible damage? If yes, has any measure been taken to repair and/or remove from service?			
29.	Do scaffolds observe the safe working distance from energized equipment?			
30.	Are scaffolds free of excess tools, material, debris and potential slippery conditions?			
31.	Are tag lines used to control loads being hoisted onto or near scaffolds?			
32.	If storms or high winds are present has a competent person been consulted and wind screens or personal fall arrest used?			
33.	Have applicable provisions been made to address proper use of personal fall arrest and guardrail systems?			
34.	Is the Guardrail (Toprail) 38 inches to 45 inches above the walking/working surface?			
35.	Is the Midrail installed approximately halfway between the walking/working surface and the top rail?			
36.	Does the scaffold "access" area (from the ladder, or other device, to the platform) have an installed fixed or moveable Guardrail and Midrail?			
37.	When mesh or screens are installed do they extend from the top of the guardrail to the platform?			
38.	Have falling object hazards been eliminated from the scaffold through the use of toeboards, screens?			
39.	Are the installed toeboards at least 3 ½ inches high?			
40.	Are the toeboards no more than ¼ inch from the walking/working surface?			
41.	Is bracing, ties, bearers, and runners installed as required?			
42.	Have all braces been installed and secured on scaffold frames?			
43.	Are frames joined together by coupling pins or equivalent means?			
44.	Are all scaffold locking devices (Coupling Pins, Hair & Rivet Pins, Pig-Tail Pins, Speed Locks, etc.) installed and operating properly?			
45.	Where uplift may occur are the frames locked together?			
46.	Have all braces been installed and secured on scaffold frames?			
47.	Are casters locked during use?			



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		YES	NO	N/A
48.	Are casters pinned into the frames or adjustment screws?			
49.	Are Screwjacks extended to less than 12 inches above the Castors?			
50.	Are outrigger beams and counter weights secured?			
51.	Is wire rope free of physical damage, kinks, broken wires, abrasion, corrosion, scrubbing, flattening, peening, heat damage?			
52.	Are wire rope clips installed and maintained as required?			
53.	Are appropriate measures taken to prevent scaffold from swaying?			
54.	Are all scaffold components assembled and used as designed by the manufacturer?			



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### ATTACHMENT D

### SCAFFOLD INSPECTION TAGS

Regular inspection must be carried out by a competent person to ensure OSHA compliance. It is unlawful to remove or interfere with this sign.

The other sides of both tags require Date and Sign-on by a Competent Person

A green rectangular form titled 'SCAFFTAG®' with the subtitle 'SCAFFOLD RELEASED FOR ACCESS'. It contains fields for 'SCAFFOLD NO.', 'JOB/SITE', and 'DATE ERECTED'. Below these are sections for 'ERECTED BY' (Signature and Print) and 'INSPECTED BY COMPETENT PERSON' (Signature and Print). The 'LOADING SCHEDULE' section lists 'LIGHT DUTY (25 LBS SQ FT)', 'MEDIUM DUTY (50 LBS SQ FT)', 'HEAVY DUTY (75 LBS SQ FT)', 'SEE ENGINEERING DRAWING', and 'OTHER', each with a checkbox. A 'FALL PROTECTION REQUIRED' section has 'YES' and 'NO' checkboxes. The 'CHECK COMPLETE ITEMS' section lists 'HANDRAILS', 'MID RAILS', 'TOE BOARDS', 'LADDER', and 'OTHER' with checkboxes. At the bottom is the Brady logo and contact information: 'BRADY 888-BRADYGO STS 593 WWW.BRADYID.COM'.A yellow rectangular form titled 'SCAFFTAG®' with a 'CAUTION INCOMPLETE SCAFFOLD' warning at the top, flanked by exclamation mark icons. It contains fields for 'SCAFFOLD NO.', 'JOB/SITE', and 'DATE ERECTED'. Below these are sections for 'ERECTED BY' (Signature and Print) and 'INSPECTED BY COMPETENT PERSON' (Signature and Print). The 'LOADING SCHEDULE' section lists 'LIGHT DUTY (25 LBS SQ FT)', 'MEDIUM DUTY (50 LBS SQ FT)', 'HEAVY DUTY (75 LBS SQ FT)', 'SEE ENGINEERING DRAWING', and 'OTHER', each with a checkbox. A 'FALL PROTECTION REQUIRED' section has 'YES' and 'NO' checkboxes. The 'CHECK INCOMPLETE ITEMS' section lists 'HANDRAILS', 'MID RAILS', 'TOE BOARDS', 'LADDER', and 'OTHER' with checkboxes. At the bottom is the Brady logo and contact information: 'BRADY 888-BRADYGO STS 594 WWW.BRADYID.COM'.





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**ATTACHMENT E**

**WIND FORCE**

There are many factors to consider in the design and erection of a scaffold. None is as important as wind force, especially in the erection of an enclosed scaffold. For example, on an enclosed scaffold with a horizontal length of 100 feet and a vertical height of 100 feet, there are 10,000 square feet of surface area. A wind of 50 mph will exert a force of 12.3 lbs/sq. foot on the scaffold. This means the total force exerted on the scaffold would be equal to 123,000 lbs., which is exceedingly more force than would be applied if the scaffold work platforms were loaded down with materials. Wind forces, such as described in the example, can easily push the scaffold against or pull it away from a structure. In either case the result would be devastating.

The following chart is provided to assist you in determining wind force.

WIND FORCE TABLE			
Miles Per Hour (MPH)	Force Per Square Foot in Pounds	Miles Per Hour (MPH)	Force Per Square Foot in Pounds
1	0.005	20	1.969
2	0.020	25	3.075
3	0.044	30	4.429
4	0.079	35	6.027
5	0.123	40	7.873
6	0.177	45	9.963
7	0.241	50	12.30
8	0.315	55	14.9
9	0.400	60	17.71
10	0.492	65	20.85
12	0.708	70	24.1
14	0.964	75	27.7
15	1.107	80	31.49
16	1.25	100	49.2
18	1.55		





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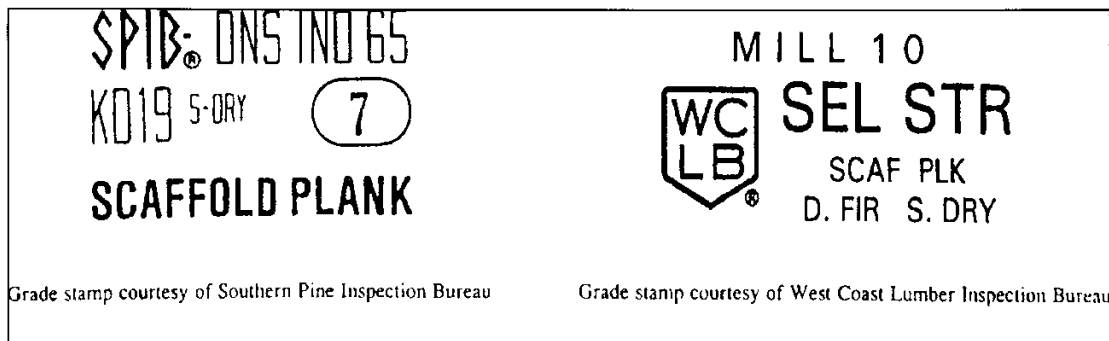
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**ATTACHMENT F**

**LUMBER GRADING**

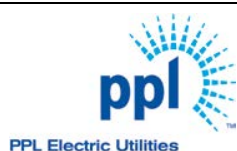
The American Lumber Standards committee has established associations that are approved to grade species of lumber. They are the: SPIB -Southern Pine Inspection Bureau, WCLIB -West Coast Lumber Inspection Bureau, NLGA -National Lumber Grading Authority, and WWPA - Western Wood Products Association.

There are several species that can be used as scaffold plank. Each approved association has its own grading criteria for the species in its area. Consult the approved grading association for the minimum grade by species for your area Southern pine "D165" and WCLIB Douglas Fir "Select Structural" are the most commonly used species. Below are copies of their respective grade stamps.



Space will not allow a detailed examination of the grading criteria of every species that could be used as scaffold plank. A listing of these species is given on page 11 in a table developed by Kenneth Hooker. Since Southern Pine Dense Industrial #65 is probably the most widely used, the SPIB D165 grading rules are shown in detail in the next section as an example of the strict criteria required of scaffold grade lumber. Computer graphics have been added to illustrate the rules.

The most familiar of the grading standards for Southern Pine is #3, #2, or #1. Many people are under the impression that #1 is the highest grade available. However, above the #1 grade in this category is lumber designated as structural grade, above structural grade is what is known as Dense Industrial 65 or D165, and above this there is a Dense Industrial 72 or D172. The following illustrates the visual testing criteria for D165 grade.

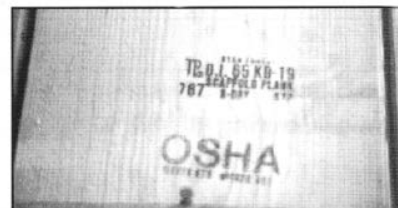


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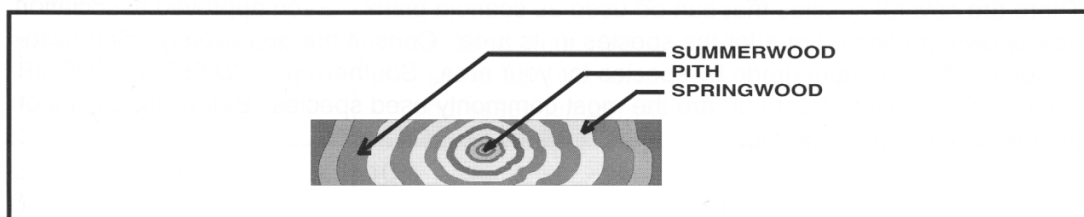
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### Visual Testing (From SPIB)

- The minimum scaffold grade planking for southern pine is Dense Industrial 65 Scaffold Plank (D165). The higher grade is Dense Industrial 72 Scaffold Plank (D172). If a grading stamp is still visible, it must show D165 or D172:



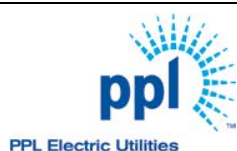
- Dense lumber, such as D165, has on one end or the other at least 6 annual rings per inch and 1/3 summerwood (the darker, harder portion of the annual ring); pieces with 4 and 5 rings are acceptable if they average 1/2 summerwood. The measurement is made 1/2 inch from the pith for three inches along a radial line. The reading should be representative. The pith is the small, soft core in the structural center of a log.



- Knots — a portion of a branch or limb that has been incorporated in a piece of lumber; a sound knot contains no decay, is firm, and is smooth, while an unsound knot contains decay, is not firm, and is not smooth.

SOUND KNOTS	
Face Width	Knot Size
8"	1 1/2"
10"	2"
12"	2 1/2"

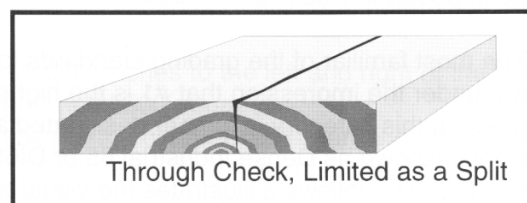
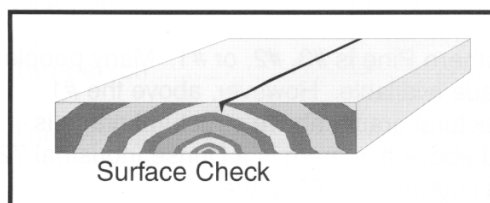
UN SOUND KNOTS	
Face Width	Knot Size
8"	1"
10"	1 1/2"
12"	1 1/2"



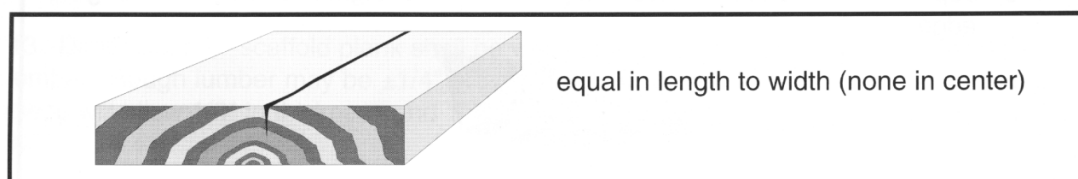
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4. Checks — a separation of the wood normally occurring across or through the rings (usually a result of seasoning); a surface check occurs only in one surface while a through check extends from one surface to the opposite surface.



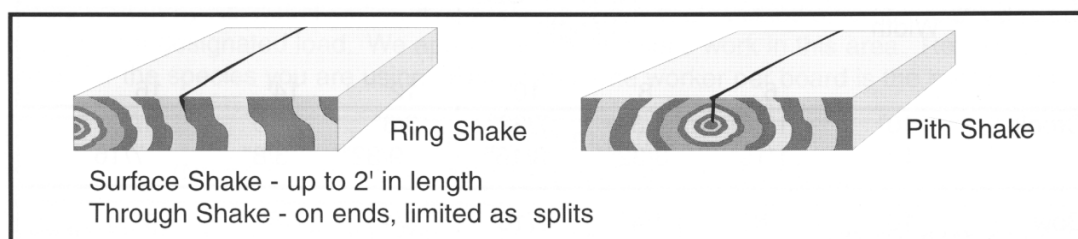
5. Split — a separation of the wood due to the tearing apart of the wood cells.



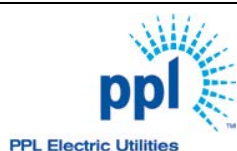
Splits are limited to the following lengths and width:

- a: Maximum width 1/8"
- b: Maximum length 10"

6. Shakes — a lengthwise separation of the wood between the rings, or through the pith; a surface shake occurs only on one surface while a through shake extends from one surface to another.



7. Wane — bark or lack of wood from any cause, except eased edges, on the edge or corner.



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1/4 the width, 1/4 the thickness but 5%  
may have wane 1/3 the width, 1/2 the  
thickness for 1/4 the length.

8. Warp — any deviation from a true or plane surface.

A. Bow — a deviation flat wise from a straight line drawn from end to end.



B. Crook — a deviation edgewise from a line drawn from end to end.



C. Cup — a deviation in the face of a piece from a straight line drawn from edge to edge.



D. Twist — a deviation flat wise, or a combination of flat wise and edgewise in the form of a curl or spiral.





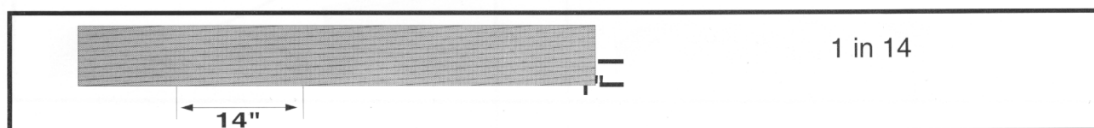
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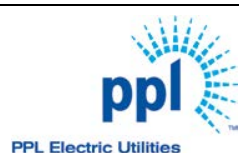
## **Warp Table.**

WARP TABLE							
Width		Length					
		6'	8'	10'	12'	14'	16'
Crook	10"	1/16"	1/8"	7/32"	3/8"	7/16"	1/2"
	12"	1/16"	3/32"	3/16"	9/32"	3/8"	7/16"
Bow	10"	1/8"	1/4"	7/16"	3/4"	7/8"	1"
	12"	1/8"	3/16"	3/8"	9/16"	3/4"	7/8"
Twist	10"	7/16"	5/8"	3/4"	15/16"	1 1/16"	1 1/4"
	12"	9/16"	3/4"	15/16"	1 1/8"	1 5/16"	1 1/8"
Cup	10" wide	1/8"	12" wide	3/16"			

9. Notches — pieces cut out of the board; notches are allowed only if they are not in the center 1/3 of the span and/or 12" from the ends. Notches in 10" and 12" are allowed provided they do not reduce to under 8" in width; limited to 4" in length. Notches aren't mentioned under D165 but this is an industry accepted standard.
10. Pitch — an accumulation of resinous material. Not limited.  
  
Pitch streak — a well-defined opening between the rings of annual growth which develops during the growth of the tree. It usually contains pitch or bark. Not limited.
11. Slope of grain — cross grain or deviation of the fiber from a line parallel to the sides of the piece.



12. All planks should be free from decay, except in unsound knots as stated earlier.
13. Dimensions — scaffold plank shall be well manufactured rough dry lumber or S4S lumber. Rough lumber may be  $\pm 1/4"$  of nominal dimension. Variation within an individual piece will allow 1/8" in thickness and 1/4" in width. The width of a plank can be from 10" to 12".
14. A periodic documented inspection is recommended by STI, but it is not required by OSHA. The above grading criteria apply only to SPIB D165. Other species may vary.



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**Wood Scaffold Plank - Other Species**

The information previously covered focused on southern pine. There are other species of lumber acceptable for scaffold planking. The following tables have been extracted from an article written by Kenneth Hooker. These tables show what species of lumber can be used to support a designated load. We appreciate Mr. Hooker's work in this area. Review the tables for the species you are using. Remember, one worker per board is the best policy.

<b>DRESSED PLANK</b> (Nominal 2x10 inches: actual 1 1/2x9 1/4 or 1 1/2x9 1/2 inches)		
Span (Feet)	Grading Agency Species	Classification
<b>Category #1: 3 Worker Loading</b>		
10	None	None
8	None	None
7	None	None
<b>Category #2: 2 Worker or 75 psf Uniform Loading</b>		
10	None	None
8	Manufactured Wood Plank*  SPIB Southern Pine  WCLIB Douglas Fir	D165 & D172  Select Structural, Dense Select Structural, Premium, and Dense Premium Structural
7	All plank previously listed in this category plus:  WCLIB Western Hemlock  WWPA Douglas Fir Larch	Select Structural and Premium  #1 and #2



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Category #3: 1 Worker or 50 psf Uniform Load		
10	Manufactured Wood Plank*	
	SPIB Southern pine	D165 and D172
	WCLIB Douglas Fir	Select Structural, Dense Select Structural, Premium, and Dense Premium Structural
8	All plank previously listed in this category plus:	
	WCLIB Western Hemlock	Select Structural and Premium
	WWPA Douglas Fir Larch	#1 and #2
7	All plank previously listed in this category plus:	
	NLGA Douglas fir, Larch	Northern and Premium
	Sitka Spruce	Select Structural and Premium
ROUGH-SAWN PLANK (Nominal 2x10 inches: actual 1 7/8X9 7/8)		
Span (Feet)	Grading Agency Species	Classification
Category #1: 3 Worker Loading		
10	None	None
8	Manufactured Wood Plank*	
	SPIB Southern Pine	D172
7	All plank previously listed in this category plus:	
	SPIB Southern Pine	D165
	WCLIB Western Hemlock	Dense Select Structural, Premium, & Dense Premium Structural
	WWPA Douglas Fir, Larch	#1 and #2
Category #2: 2 Workers or 75 psf Uniform Loading		
10	All plank previously listed in this category #1	



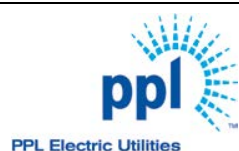


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8	All plank previously listed in this category #1 plus:	
	NLGA Douglas fir, larch	North
	Western Hemlock	North
	Eastern Hemlock, Tamarack	North
	WCLIB Douglas Fir	Select Structural
	Sitka Spruce	Premium
	Western Hemlock	Select Structural & Premium
	Hem-Fir	Premium
7	All plank previously listed in this category plus:	
	NLGA Eastern White Pine	North
	Red Pine	North
	Western Cedars	North
	Ponderosa Pine, Coast Sitka Spruce	North
	Spruce, Pine, Fir, Hem-Fir	North
	WCLIB Sitka Spruce	Select Structural
	Hem-Fir	Select Structural

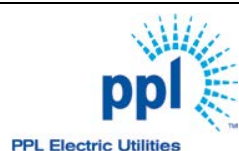




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Category #3: 1 Worker or 50 psf Uniform Loading		
10	Manufactured Wood Plank*	
	All SPIB and WWPA previously listed above plus:	
	NLGA Douglas Fir, Larch	North
	Western Hemlock	North
	Eastern Hemlock Tamarack	North
	WCLIB Douglas Fir	Select Structural, Dense Select Structural, Premium, and Dense Premium Structural
	Sitka Spruce	Select Structural and Premium
	Western Hemlock	Select Structural and Premium
	Hem-Fir	Premium
8	All plank previously listed in this category plus:	
	NLGA Eastern White Pine	North
	Red Pine	North
	Western Cedars	North
	Ponderosa Pine, Coast Sitka Spruce	North
	Spruce, Pine, Fir, Hem-Fir	North
	WCLIB Sitka Spruce	Select Structural
	Hem-Fir	Select Structural
7	All plank previously listed in this category plus:	
	NLGA Western White Pine	
	Sitka Spruce	Select Structural and Premium



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**NOTES:** Load conditions — one worker with tools is considered to weigh 250 pounds and is located at the span center. Two workers are located 18 inches to each side of the span center. Three workers are located at mid-span and 18 inches to each side of mid-span. Medium-duty loading is 50 PSF heavy-duty is 75 PSF.

Net plank sizes shown in inches are minimum OSHA acceptable scaffold planks. A wider plank of the same thickness may be substituted to increase the safety factor. Also, sizes and design values used are for dry conditions (where moisture content does not exceed 19%) and for planks not treated with preservative or fire-retardant chemicals.

### PLANK TESTING

The subject of plank testing is controversial because there are divided views throughout the industry. The reason is as follows. Most experts would agree that in an ideal situation physically testing and certifying that the plank will hold the required load is a good idea. However, the requirement is that the planks hold four times the maximum intended load. The maximum load would be one person (250 lbs) or two persons (500 lbs.). In actual use, the person (point) loading will automatically exceed the uniform loading assigned to the deck (e.g. 25PSF). It will also exceed the arbitrary test loading amounts given by OSHA in 1915.68 table E-4. If testing is done at four to one with a 500 lb test weight, the test load would be 2000 lbs., which could be destructive testing. The irony is that the testing creates a "catch 22," where in the plank might have been perfectly fine until we tested it. After testing, we have proven that the plank was fine before testing, but now it is no longer suitable for use. On the other hand, if testing is done at a lesser load, such as 500 or 750 lbs., it has not been proven that the plank will carry the required load.

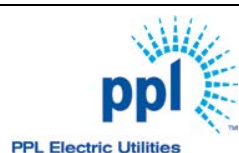
Another big variable is moisture content. The same plank will test out with varying deflection results depending upon the moisture content. The plank has not changed, but higher moisture causes greater deflection.

The OSHA scaffolding regulation simply states that scaffold planks shall not deflect more than  $1/60$  of their span when loaded (new 1926.451(f)(16)). For example, if an 8' plank on a standard 7' span is loaded at design load (250 or 500 lbs.), it should not deflect more than  $7'/60 = 84"/60 = 1.4"$ . If deflection is greater, the plank should not be used. Do not place more weight on a plank than design load (e.g. one worker: 250 pounds or two worker; 500 pounds).

The best policy is to do a thorough visual inspection, and then: "If in doubt. DISCARD."

### MANUFACTURED PLANKS

There are several manufacturers of man-made scaffold plank. These are usually a laminated veneer, similar to plywood, except that all grain runs parallel to the length. These planks meet the OSHA requirements for loading and may be used in lieu of solid sawn plank.

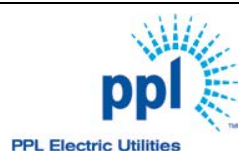


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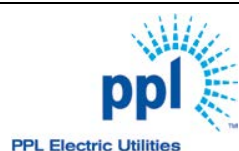
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### **1.0 PURPOSE/SCOPE**

- 1.1 This procedure applies to PPL Electric Utilities employees who are working on or near transmitting antennas.
- 1.2 Ensure that employees are able to identify transmitting antennas.
- 1.3 Ensure that employees understand the hazards involved when working on or near:
  - 1.3.1 Potentially hazardous levels of RF (Radio Frequency) radiation)
  - 1.3.2 Fiber optic cable ends (during an emergency situation)
- 1.4 Define the process for controlling exposure to RF (Radio Frequency) radiation and fiber optic cable ends.

### **2.0 RESPONSIBILITY**

- 2.1 Management
  - 2.1.1 Ensure that PPL Electric Utilities employees who work on or near transmitting antennas are properly trained to:
    - a. Recognize the transmitting antennas.
    - b. Understand the hazards of RF radiation and fiber optic cable ends.
    - c. Control exposure to RF radiation and fiber optic cable ends.
  - 2.1.2 Determine type of RF monitor to be used, and the level at which it alarms.
  - 2.1.3 Ensure that RF monitors are available to employees who work on or near transmitting antennas or other RF radiation sources.
  - 2.1.4 Ensure that employees who use RF monitors know the proper use of such equipment prior to commencing work. (Employees shall follow the manufacturer's operating instructions.)
  - 2.1.5 Work with EHS, if needed, to conduct a hazard assessment of transmitting antenna sites.
  - 2.1.6 Ensure that employees successfully complete [MST820 \(Recognizing Telecommunications Hazards - CBT\)](#) before they work on or near transmitting antennas.
  - 2.1.7 Maintain training records for a minimum of three years.



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2.2 Employee-in-Charge

2.2.2 Identify method that will be used to control the exposure to RF radiation and fiber optic cable ends.

Three options are available to control exposure to transmitter RF radiation:

- a. Maintain fixed clearance from the antenna.
- b. Use RF monitors to measure and control exposure.
- c. De-energize the transmitter and disconnect the antenna cable.

2.2.3 Conduct a tailboard conference at the jobsite. Document the tailboard on the tailboard sheet, and submit copy to supervisor.

2.2.4 Ensure that equipment, materials, and structures are in good working condition and properly secured in place.

2.2.5 Ensure that employees who work on or near transmitting antennas have received proper training.

2.2.6 Work with the facility antenna technician, as necessary, to ensure that transmitters/antennas are de-energized. Ensure that the tag out/lockout procedure is implemented as needed.

2.3 Employee

2.3.1 Successfully complete [MST820 \(Recognizing Telecommunications Hazards - CBT\)](#) to ensure that he/she:

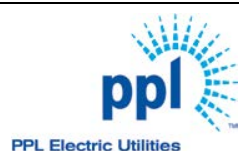
- a. Recognizes the transmitting antennas.
- b. Understands the hazards of RF radiation and fiber optic cable ends.
- c. Controls exposure to RF radiation and fiber optic cable ends.

2.3.2 Adhere to the applicable safety procedures.

2.3.3 Ensure that the RF monitor is working properly.

2.3.4 Ensure, before climbing, that all associated structures and equipment are in good working condition and properly secured.

2.3.5 Avoid looking into energized fiber optic cable ends.



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### 2.4 Safety Operations

- 2.4.1 Work with management, if needed, to conduct a hazard assessment of transmitting antenna sites.
- 2.4.2 Provide consultation and guidance on issues concerning controlling exposure to RF radiation and fiber optic cable ends.

## 3.0 APPLICABILITY

- 3.1 This procedure applies to PPL Electric Utilities employees who are working on or near transmitting antennas.

## 4.0 TERMS AND DEFINITIONS

- 4.1 **Clearance Distance** – The minimum distance a worker must stay from the emitting side of an operating transmitter antenna, unless the employee is using an RF Monitor.
- 4.2 **Employee-in-Charge** – An employee designated by PPL Electric Utilities to perform specific duties under the terms of this SP, including conducting tailboard conferences, identifying the method of controlling exposure to RF (Radio Frequency) radiation and fiber optic cable ends, and ensuring a safe work environment.
- 4.3 **Fiber Optic Cable Ends** – Ends of cables made of optical fibers. The cables are used to transmit information by sending pulses of light. The light may be damaging to the retina if one looks directly into the cable ends. Fiber optic cable ends may be encountered during an emergency situation when a cable is severed.
- 4.4 **RF (Radio Frequency) Monitor** – A monitor that measures the intensity of the radio signals. It will alarm at a preset level. This allows the employee to be at a safe exposure level when the monitor does alarm.
- 4.5 **RF (Radio Frequency) Radiation** – Electromagnetic radiation that includes the waves used for most communication, such as commercial radio, television, private radio, and cell phones. It also includes microwaves, but not does include infrared radiation and light radiation.  
  
Radio frequency radiation is generally considered to include electromagnetic waves of frequencies up to 300 GHz.  
  
Non-ionizing radiation includes RF radiation, as well as infrared radiation, visible light (including that used in fiber optic cables), and some ultraviolet radiation.
- 4.6 **Tag out/Lockout Procedure** – A procedure in which equipment is de-energized, tagged with “Danger, Do Not Operate” (DDNO) tags, and secured such that it



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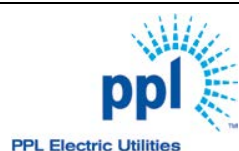
cannot be inadvertently re-energized. (The Tag out/Lockout Procedure is covered in the Energy Control Procedure.)

- 4.7 **Technician** – A representative of the owner company of the transmitting equipment who is authorized to perform work on the telecommunication facility (e.g., Sprint, Nextel, AT&T, Verizon).

## **5.0 MAIN BODY**

### **5.1 Hazards and Symptoms of RF (Radio Frequency) Radiation Exposure**

- 5.1.1 High levels of RF radiation may be found in the vicinity of transmitting equipment. RF radiation can directly affect worker health or effect workers' offspring.
- 5.1.2 RF radiation (such as that from microwave communications or radar) can harm the cell structure of the body. The eyes, reproductive organs, brain, and nerves are most susceptible. The effects depend on the amount of exposure; specifically, the strength of the signal, distance from the source, and exposure time.
- 5.1.3 RF radiation can heat the body cells and damage them, or damage the way the cells grow and function. It could lead to eye damage or cataracts, reduced sperm production, behavioral changes, immunologic (depressed body immune) conditions, and possibly some types of cancer.
- 5.1.4 Since RF radiation can affect cells, over-exposure may cause birth defects in offspring.
- 5.1.5 Touching a transmitting antenna may cause thermal burns.
- 5.1.6 Symptoms of traditional microwave sickness in humans include headache, irritability, dizziness, sleeplessness, memory loss, depression, and emotional instability.
- 5.1.7 Due to sensitivity of the eyes to microwave exposure, when within the clearance distance of an energized microwave antenna, employees shall not look into a dish antenna.



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### 5.2 Warning Signs of RF (Radio Frequency) Radiation

#### 5.2.1 Signs shall be posted on the bottom of all transmitting antenna structures.

a. PPL-specific signs may be found at PPL locations where RF levels exceed the OSHA defined limits. A PPL sign, shown in Figure 1, provides:

- Operating frequency of the antenna. Common operating frequencies include:
  - AM Radio: 0.540 – 1.710 MHz
  - PPL Two-Way Radio Base Stations: 33 – 37 MHz
  - FM Radio: 88 – 108 MHz
  - Cellular Phones: 800 – 900 MHz
  - Digital PCS Phones: 1.8 – 2.0 GHz
  - Microwave—Radar: 6, 10, 38, and 50 GHz

For example, a frequency of 875 MHz (written on the sign) would indicate a cellular phone antenna.

- Warning of an RF radiation hazard.
- Reference to GSP-16: Telecommunications.
- Phone number to call for additional information.

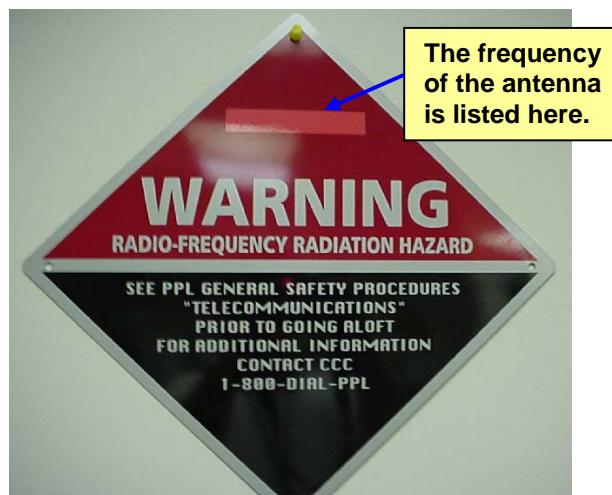
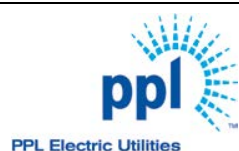


Figure 1. PPL Transmitter Antenna Warning Sign





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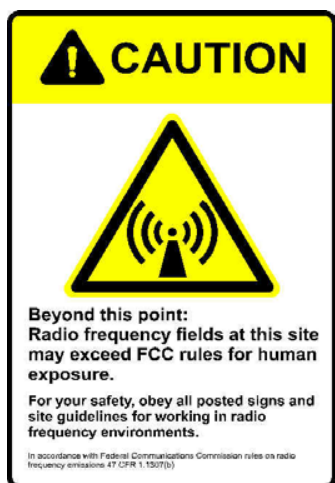
- b. Non-PPL signs may also be found at PPL locations where RF levels exceed the OSHA defined limits. Figure 2 illustrates four of these signs. The signs are typically found at locations not owned by PPL.



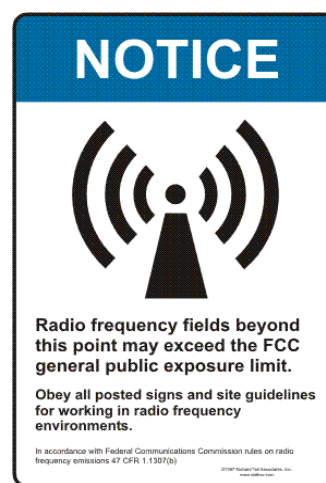
This sign indicates high RF exposure that exceeds 100% of the OSHA defined limits.



This sign indicates a tower location where the RF exposure falls between 20% and 99% of the OSHA defined limits.



This sign indicates an area where the RF exposure falls between 20% and 99% of the OSHA defined limits.



This sign indicates an area which may contain RF levels that exceed the general population exposure limits.

**Figure 2. Non-PPL Transmitter Antenna Warning Signs**



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### 5.3 Antennas

#### 5.3.1 Types of Antennas

The type of antenna used determines the radiation pattern that is emitted. (In the figures shown in this section, the red arrows indicate the direction of radiation.)

- a. An omni-directional antenna, shown in Figure 3, radiates signals equally in all directions on a plane. For example, the whip antenna shown radiates a signal the height of the mast in all horizontal directions.

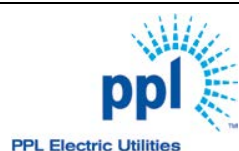


Figure 3. Whip Antenna

- b. The sector antenna, shown in Figure 4, is a directional antenna. It radiates energy on a horizontal plane, but its radiation pattern is limited to the area in front of the antenna.



Figure 4. Sector Antenna



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- c. The sector antenna, shown in Figure 4, is a directional antenna. It radiates energy on a horizontal plane, but its radiation pattern is limited to the area in front of the antenna.
- d. The parabolic antenna of Figure 5 is another directional antenna. It radiates energy in a cone-shaped pattern not limited to a horizontal plane.



**Figure 5. Parabolic Antenna**

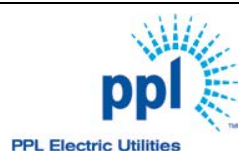
### 5.3.2 Antenna Configurations

A structure may contain several antennas, either all of the same type or a mixture of types.

#### a. **Antenna Array** –

Figure 6 shows an array of sector antennas. An individual sector antenna is directional, but a set of them arranged as shown act collectively as an omnidirectional antenna.

- b. **Repeater and Donor Antennas** – One antenna (the donor antenna) receives the signal and one (the repeater antenna) transmits an amplified version of the signal. Either of the two antennas may be configured as the donor antenna, with the other antenna configured as the repeater antenna. Before approaching the antennas, employees shall identify the repeater antenna and control exposure to it. See Figure 7.



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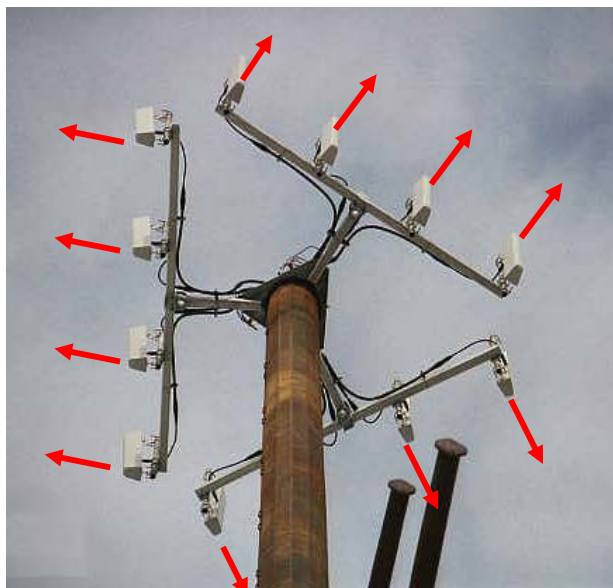


Figure 6. Sector Antenna Array

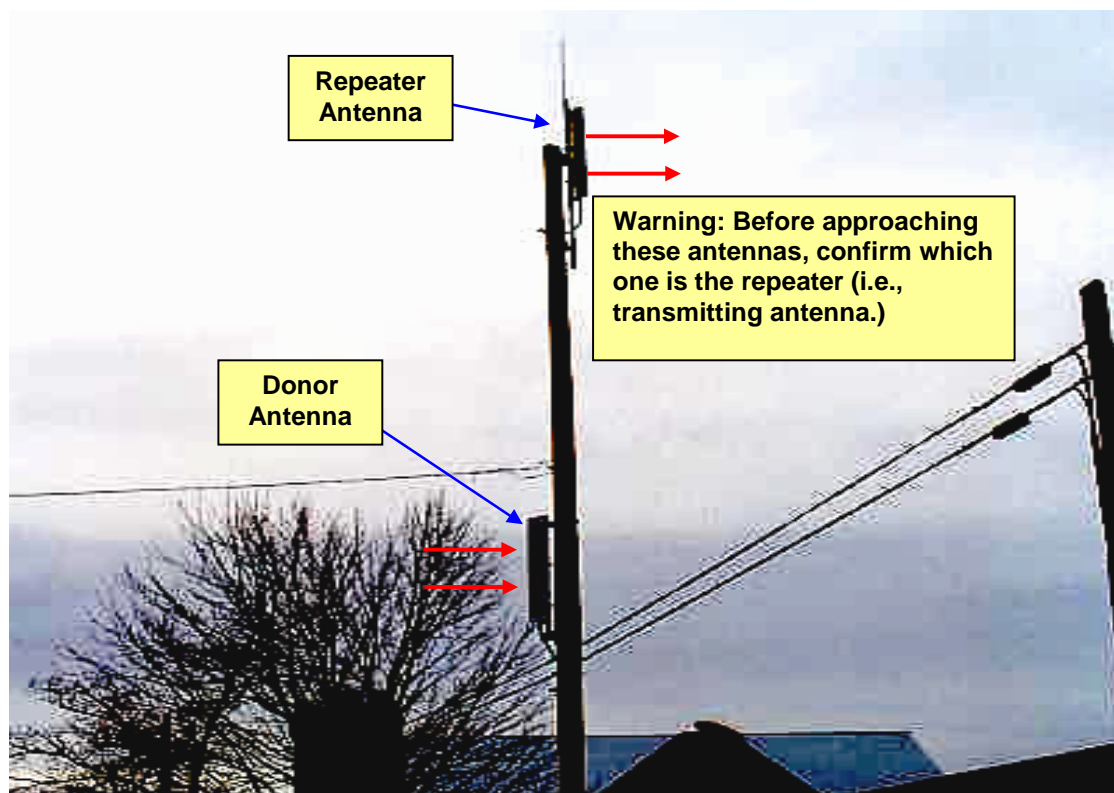
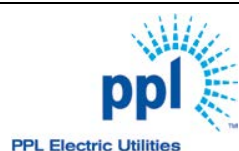


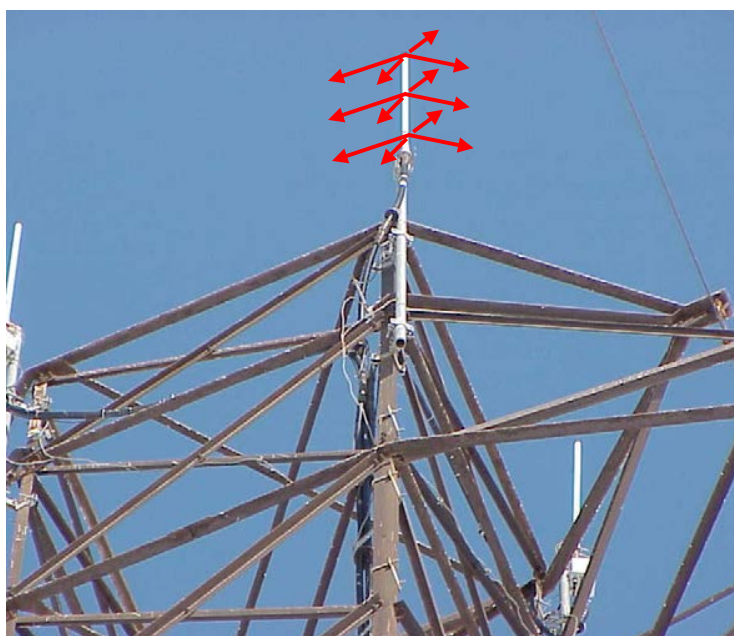
Figure 7. Repeater and Donor Antenna (Fixed-Direction)



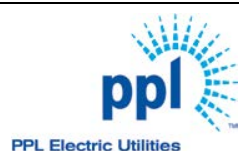
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- c. **Whip Antennas** – As explained in Section 5.3.1, a whip antenna emits a 360-degree radiation pattern in a horizontal plane the height of the antenna mast. Likewise, the array whip antennas shown in Figure 8 would radiate in the same omnidirectional pattern.



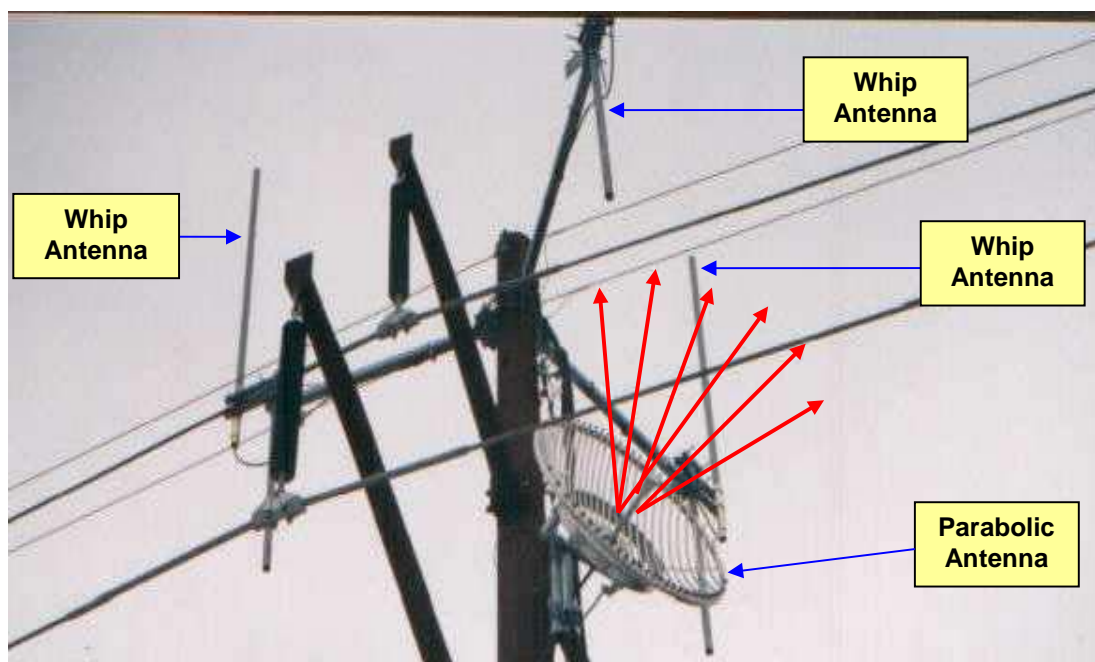
**Figure 8. Whip Antenna Array**



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- d. **Combination of Antennas** – Figure 9 shows a single parabolic antenna and three whip antennas used on the same structure. Although the parabolic antenna has a directional radiation pattern, the whip antennas are omnidirectional. Hence, the overall pattern is omnidirectional.



**Figure 9. Parabolic Antenna and Whip Antennas**





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5.4 Controlling RF (Radio Frequency) Radiation Exposure

5.4.1 Three options are available to control exposure to transmitter RF radiation:

a. Maintain Fixed Clearance

Workers shall stay outside the minimum clearance distance of an operating transmitter antenna. This minimum clearance shall be maintained from the emitting side(s) of the antenna:

- 30 MHz – 799 MHz: 10 feet
- 800 MHz – 300,000 MHz: 30 feet

For example, a whip antenna emits signal in a 360-degree horizontal plane. Hence, the minimum clearance must be maintained from all sides of the whip antenna.

b. Use RF Monitors to Control Exposure

- When an employee works within the clearance distance of a transmitting antenna (specified above), he/she shall wear an RF monitor.
- Management shall determine the type of RF monitor and the level at which it alarms.

Most RF monitors alarm used at PPL are set to alarm at 50% of the maximum permissible exposure (MPE) level. When the monitor alarms, the employee shall move away from the antenna (beyond the clearance distance); and then reset the monitor per the manufacturer's instructions prior to again approaching the antenna.

There will be no overexposure if the employee moves outside the field within a time period specified by the RF monitor manufacturer.

c. De-Energize the Transmitter

- In rare cases, it may be necessary that the transmitter be shut down before the employee works near the antenna. In such a case, a technician in charge of the transmitter and antenna shall perform all necessary switching to de-energize the transmitter.
- Even if the transmitter is shut down, employees working within the clearance distance of the antenna shall wear RF Monitors. (This



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is because a nearby operating antenna could induce a signal into an otherwise de-energized antenna.)

- The employee-in-charge shall consult with the technician and confirm that the transmitter has been shut down. This can be done in any one of three ways:
  - Get verbal/written confirmation from the technician that the transmitter has been shut down.
  - Visually verify that the power meters indicate that the transmitter is shut down. (Meters will read zero.)
  - Observe the technician as he/she de-energizes the transmitter.

As an additional precaution, the employee-in-charge may use an RF monitor to verify that no RF signal level is present.

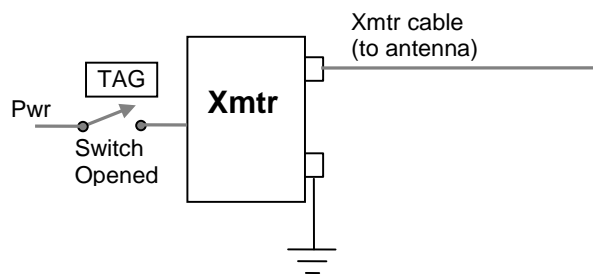
After confirming that the transmitter has been shut down, the employee shall implement the tag out/lockout procedure.

Step 1: Prepare to tag out/lockout the transmitter.

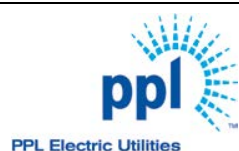
Step 2: Request that the technician shut down the transmitter.

Step 3: Technician shuts down transmitter.

Step 4: Technician opens the main power disconnect to the transmitter. If this method is used, assure it blocks all power connections, including normal service, battery, and emergency generator supplies. Tag and lock the main power disconnect.







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If an employee's RF monitor alarms, he/she should immediately move away from the area. The technician should then be contacted. DO NOT work in the exposure area of the antenna until the problem is resolved.

Step 5: When work is completed, the employee-in-charge shall notify the technician/facility owner that the work has been completed, and then remove the DDNO tags and additional safety elements.

### **5.5 Controlling Exposure to Fiber Optic Cable Ends**

- 5.5.1 In some emergency situations (e.g., clearing accident scenes) it may be necessary to cut fiber optic cables. In order to prevent eye damage, employees shall not look into the end of fiber optic cables.

## **6.0 REFERENCES**

- 6.1 ANSI/IEEE C95.1-2005 (Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz)
- 6.2 FCC OET Bulletin 65 Edition 97-01
- 6.3 ACGIH, John Moulder FAQ on Cellular Phone Antennas and Health Energy Control Process Procedure
- 6.4 PPL Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 29 CFR 1910.268 Telecommunications](#)
- 7.2 [OSHA 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution](#)
- 7.3 [OSHA 29 CFR 1910.97 Nonionizing Radiation](#)



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## 8.0 TRAINING / SAFETY

- 8.1 Ensure that employees who work on or near transmitting antennas have successfully completed [MST820 \(Recognizing Telecommunications Hazards - CBT\)](#).
- 8.2 Work with the facility antenna technician, as necessary, to ensure that transmitters/antennas are de-energized. Ensure that the lockout / tag out procedure is implemented as needed.

## 9.0 COMPLIANCE AND EXCEPTIONS - N/A

## 10.0 ATTACHMENTS - N/A

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Electric Utilities' Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	07/06/2017	Effective	07/06/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed for possible regulatory changes and changes to department references. No other changes were made to this document.			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		Jacque Creamer			
<b>Reviewed by:</b>		Adam Frederick, Richard Horan, Jeff Monsell, Brian Kostik			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

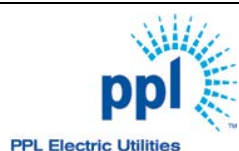


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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish minimum safety requirements to be followed by employees engaged in trenching and excavation work.
- 1.2 This procedure applies to all open excavations or trenches made in the earth's surface.

## **2.0 RESPONSIBILITY**

- 2.1 Safety Operations
  - 2.1.1 Provide guidance in safe work practices on all trenching and excavation projects in compliance with OSHA, safety rules and this procedure.
  - 2.1.2 Auditing/monitoring user departments for compliance with trenching and excavation program.
- 2.2 Field Manager responsible for:
  - 2.2.1 Requiring all trenching excavation projects are performed under the provisions of OSHA regulatory requirements on trenching and excavations.
- 2.3 First-Line Supervisors/Competent Persons Responsible for:
  - 2.3.1 Determining soil classifications on the project.
  - 2.3.2 Selecting protective systems.
  - 2.3.3 Inspect excavations and any protective systems for hazards (e.g., accumulating water) each day, prior to employee entry, ensuring each employee in an excavation greater than 5 feet is protected from cave-ins by an adequate protective system or by slopping/benching of the excavation.
  - 2.3.4 Conducting proper tailboards as needed.
  - 2.3.5 Monitoring work and stopping work when unsafe practices or conditions are observed.
  - 2.3.6 Assuring all work is done in accordance with OSHA regulatory requirements.
- 2.4 Employees Responsible for:
  - 2.4.1 Performing work within the guidelines of safety rules and OSHA requirements for excavating, trenching and shoring.



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2.4.2 Communicate all unsafe, or potentially unsafe, conditions with the supervisor or competent person, as well as co-workers.

### **3.0 APPLICABILITY**

3.1 This procedure establishes minimum safety requirements to be followed by employees engaged in trenching and excavation work.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 **Aluminum Hydraulic Shoring** means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
- 4.2 **Bell-bottom Pier Hole** means a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.
- 4.3 **Benching (Benching System)** means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- 4.4 **Cave-in** means the separation of a mass of soil or rock material from the side of an excavation or the loss of soil from under a trench shield or support system and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
- 4.5 **Competent Person** means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.
- 4.6 **Cross Braces** mean the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
- 4.7 **Excavation** means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
- 4.8 **Faces or Sides** mean the vertical or inclined earth surfaces formed as a result of excavation work.
- 4.9 **Hazardous Atmosphere** means an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.



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- 4.10 **Protective System** means a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
- 4.11 **Ramp** means an inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.
- 4.12 **Sheeting** means the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.
- 4.13 **Shield (Shield System)** means a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields".
- 4.14 **Shoring (Shoring System)** means a structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
- 4.15 **Sloping (Sloping System)** means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
- 4.16 **Stable Rock** means natural, solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.
- 4.17 **Support System** means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.
- 4.18 **Tabulated Data** means tables and charts approved by a registered professional engineer and used to design and construct a protective system.
- 4.19 **Trench (Trench Excavation)** means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet. If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure



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to the side of the excavation to 15 feet or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

- 4.20 **Uprights** mean the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting".
- 4.21 **Wales** mean horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

## **5.0 MAIN BODY**

### **5.1 Underground Installations**

- 5.1.1 The estimated location of utility installations, such as sewer, telephone fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation (call Pennsylvania 811 by dialing 8-1-1 or 1-800-242-1776).
- 5.1.2 Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation.
- 5.1.3 When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.
- 5.1.4 While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.
- 5.1.5 Means of egress from trench excavations. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
- 5.1.6 Exposure to vehicular traffic. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.
- 5.1.7 Exposure to falling loads. No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be





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required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

- 5.1.8 Warning system for mobile equipment. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

**5.2 Hazardous Atmospheres**

- 5.2.1 Testing and controls. In order to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:
- a) Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.
- 5.2.2 Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions may include providing proper respiratory protection or ventilation.
- 5.2.3 Adequate precautions shall be taken, such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 10 percent of the lower flammable limit of the gas.
- 5.2.4 When controls are used that are intended to reduce the level of atmospheric contaminants and employees must enter where hazard exists, reference guidelines in Confined Space Procedure.
- 5.2.5 Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

**5.3 Protection from Hazards Associated with Water Accumulation**

- 5.3.1 Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect





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employees adequately vary with each situation but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

- 5.3.2 If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.
- 5.3.3 If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person prior to entry.

**5.4 Stability of Adjacent Structures**

- 5.4.1 Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.
- 5.4.2 Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:
  - a) A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure, or:
  - b) The excavation is in stable rock, or:
  - c) A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity, or:
  - d) A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.
- 5.4.3 Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.
- 5.4.4 Protection of employees from loose rock or soil. Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material, installation of



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protective barricades at intervals as necessary on the face to stop and contain falling material, or other means that provide equivalent protection.

- 5.4.5 Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.
- 5.4.6 Inspections. Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
- 5.4.7 Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
- 5.4.8 Fall protection. Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails shall be provided where walkways are 6 feet or more above lower levels.
- 5.4.9 Adequate barrier physical protection shall be provided at all remotely located excavations not attended by employees. All wells, pits, shafts, etc., shall be barricaded or covered. Upon completion of exploration and other similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

**5.5 Requirements for Protective Systems**

- 5.5.1 Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with OSHA guidelines except when:
  - a) Excavations are made entirely in stable rock, or:
  - b) Excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.



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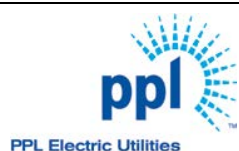
- c) Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.
  - d) Design of sloping and benching systems. The slopes and configurations of sloping and benching systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of Attachment 1. Sloping and benching systems not utilizing Attachment 1 shall be approved by a registered professional engineer.
  - e) At least one copy of the tabulated data which identifies the registered professional engineer who approved the data shall be maintained at the job site during construction of the protective system.
- 5.5.2 Design of support systems, shield systems, and other protective systems. Designs of support systems, shield systems, and other protective systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of Attachments 2 and 3.
- 5.5.3 Materials and equipment. Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.
- 5.5.4 Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer and in a manner that will prevent employee exposure to hazards.
- 5.5.5 When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service and shall be evaluated and approved by a registered professional engineer before being returned to service.
- 5.5.6 Installation and removal of support - general. Members of support systems shall be securely connected together to prevent sliding, falling, kick-outs, or other predictable failure.
- a) Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
  - b) Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.



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- c) Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
  - d) Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
  - e) Backfilling shall progress together with the removal of support systems from excavations.
  - f) Additional requirements for support systems for trench excavations. Excavation of material to a level no greater than 2 feet below the bottom of the members of a support system shall be permitted but only if the system is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.
- 5.5.7 Sloping and benching systems. Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.
- 5.5.8 Shield systems. Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.
- a) Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.
  - b) Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
  - c) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.
  - d) Additional requirement for shield systems used in trench excavations. Excavations of earth material to a level not greater than 2 feet below the bottom of a shield shall be permitted but only if the shield is designed to resist the forces calculated for the full depth of the trench and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

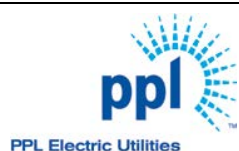


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5.6 Soil Classification

- 5.6.1 Cemented Soil means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.
- 5.6.2 Cohesive Soil means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side slopes, and is plastic when moist. Cohesive soil is hard to break up when dry and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay, and organic clay.
- 5.6.3 Dry Soil means soil that does not exhibit visible signs of moisture content.
- 5.6.4 Fissured means a soil material that has a tendency to break along definite planes of fracture with little resistance or a material that exhibits open cracks, such as tension cracks, in an exposed surface.
- 5.6.5 Granular Soil means gravel, sand, or silt (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.
- 5.6.6 Layered System means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.
- 5.6.7 Moist Soil means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.
- 5.6.8 Plastic means a property of a soil which allows the soil to be deformed or molded without cracking or appreciable volume change.
- 5.6.9 Saturated Soil means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments, such as a pocket penetrometer or shear vane.
- 5.6.10 Soil Classification System means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the characteristics of the deposits and the environmental conditions of exposure.

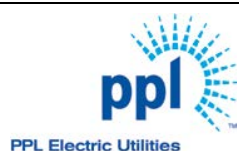


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- 5.6.11 Stable Rock means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
- 5.6.12 Submerged Soil means soil which is under water or is free seeping.
- 5.6.13 Unconfined Compressive Strength means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.
- 5.6.14 Wet Soil means soil that contains significantly more moisture than moist soil but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.
- 5.7 Type A" means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam, and in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:
  - 5.7.1 The soil is fissured, or
  - 5.7.2 The soil is subject to vibration from heavy traffic, pile driving, or similar effects, or:
  - 5.7.3 The soil has been previously disturbed, or:
  - 5.7.4 The soil is part of a sloped, layered system when the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater, or:
  - 5.7.5 The material is subject to other factors that would require it to be classified as a less stable material.
- 5.8 "Type B" means:
  - 5.8.1 Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa), or:
  - 5.8.2 Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and in some cases, silty clay loam and sandy clay loam.
  - 5.8.3 Previously disturbed soils except those which would otherwise be classed as Type C soil.

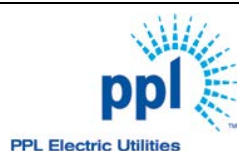




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- 5.8.4 Soil that meets the unconfined compressive strength or cementation requirements for Type A but is fissured or subject to vibration, or:
- 5.8.5 Dry rock that is not stable, or:
- 5.8.6 Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less than four horizontal to one vertical (4H:1V) but only if the material would otherwise be classified as Type B.
- 5.9 "Type C" means:
  - 5.9.1 Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less, or:
  - 5.9.2 Granular soils including gravel, sand, and loamy sand, or:
  - 5.9.3 Submerged soil or soil from which water is freely seeping, or:
  - 5.9.4 Submerged rock that is not stable, or:
  - 5.9.5 Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.
- 5.10 Selection of Protective Systems:
  - 5.10.1 Follow the figures provided in OSHA 1926 [Subpart P](#) for excavations 20 feet or less in depth.
  - 5.10.2 Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with [OSHA 1926 Subpart P - Excavations \(Selections of Protective Systems\)](#).
- 5.11 Trenching and Shoring Checklist
  - 5.11.1 Various items that should be considered when designing, building, or overseeing a project involving trenching or shoring:
    - a. Site Analysis
    - b. Utilities
    - c. Surface Encumbrances
    - d. Access and Egress
    - e. Exposure to Vehicular Traffic
    - f. Exposure to Falling Loads
    - g. Warning Systems
    - h. How Deep? How Long Open?
    - i. Hazardous Atmospheres



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- j. Emergency Rescue Equipment/Plan
- k. Water Accumulation
- l. Stability of Adjacent Structures
- m. Protection from Loose Rock or Soil
- n. Fall Protection
- o. Competent Person
- p. Daily Inspection

## **6.0 REFERENCES**

- 6.1 PPL Electric Utilities Safety Rule Book
- 6.2 DDI W-328 Procedures for Excavating Near Energized Cables

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA - 1926 Subpart P. - Excavations 1926.650, 1926.651, 1926.652
- 7.2 OSHA - 1926 Subpart M. 1926.501, 1926.502

## **8.0 TRAINING**

- 8.1 Follow all training and regulatory requirements necessary in order to safely perform excavating, trenching and shoring activities.

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS – N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).





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## 12.0 RECORD OF REVISIONS

<b>Rev</b>	01	<b>Date</b>	02/03/2017	<b>Effective</b>	3/17/2017
<b>Prepared by:</b>	Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations				
<b>Reviewed by:</b>	Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.				
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations				
<b>Revision Comments:</b>	Reviewed to ensure compliance with OSHA 29 CFR 1926 Subpart P and Subpart M.				

<b>Rev</b>	00	<b>Date</b>	08/13/2012	<b>Effective</b>	08/13/2012
<b>Prepared by:</b>	David Hughes				
<b>Reviewed by:</b>	Jacque Creamer, Adam Frederick, and Richard Horan				
<b>Approved by:</b>	Barry Downes				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				



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### **1.0 PURPOSE /SCOPE**

- 1.1 Monitor the safety of all contractors.
- 1.2 Define the process for selecting, developing, administering, implementing, evaluating, and closing out/retaining contracts.
- 1.3 The requirements of this procedure generally apply to suppliers performing physical work for PPL Electric Utilities, whether the work is bid or sole-sourced.
- 1.4 This procedure covers the requirements for labor type contracts. Some types of contracts do not require complexity. As such, not all sections of this procedure apply to all contracts. Business Lines shall determine the applicability of this procedure to their specific types of contracts.
- 1.5 Establish a process instilling that each contractor (and any subcontractor of such contractor) working for PPL Electric Utilities makes safety a value for its employees and the public.

### **1.0 RESPONSIBILITY**

- 1.1. Business Line
  - 2.1.1 Determine the sections of this procedure that apply to the various types of contracts. The following types of contract work are exempt from the pre-award activity requirements and post-work evaluation requirements. However, the business line may elect to follow the requirements of this procedure based on the nature of the contract and possible hazards involved.
    - a) Blanket contracts with releases under \$50,000
    - b) Sole-source contracts under \$50,000
    - c) Service order contracts
    - d) Small contracts that do not involve hazardous activities
    - e) Professional/consultant services, temporary office services, office equipment repair, Field/Service Engineers and Technicians
    - f) Technical reps (not directly managing labor crews)
    - g) Low hazard jobs such as instrument repair or calibration, fence repair, concrete repair, paving, snow plowing, door & lock repair, and other low hazard jobs performed by contractors.
    - h) Emergency work
  - 2.1.2 The annual review/audit by Safety Operations Representative will document compliance with the applicable sections of this procedure.



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(The Business Line may determine an alternate method for reviewing/auditing compliance with this procedure).

- 2.1.3 Designate the Contract Administrator and the Contract Field Representative (CFR).
- 2.1.4 Monitor that Contract Administrator and CFR have completed training course [PQS 258 - Facilitating Contractor Safety CBT](#).
- 2.1.5 Specify frequency of work site safety inspections conducted by the CFR.
- 2.1.6 Monitor that inspections are completed and documented.
- 2.2 Contract Administrator
  - 2.2.1 Work with Supply Chain to:
    - a) Develop a list of bidders who will receive the RFP.
    - b) Determine if the Contractor Safety Qualification Questionnaire should be included in the RFP.
    - c) Include, if appropriate, a request that bidders identify any special safety concerns that may be applicable to the work.
  - 2.2.2 Work with Safety Operations Representative to monitor that all safety related considerations are properly addressed in the RFP. Include program reviews (e.g., confined space, fitness for duty) and safety related contract terms.
  - 2.2.3 Conduct pre-bid meeting (as requested). Address safety-related issues.
  - 2.2.4 Receive and review proposals from Supply Chain.
  - 2.2.5 Receive and review (if applicable) Contractor Safety Qualification Questionnaires received from all bidders and forward to Safety Operations Representative.
  - 2.2.6 Work with Supply Chain to determine the successful bidder.
  - 2.2.7 Work with Supply Chain to monitor that the safety requirements included in the RFP, and any revisions based on the pre-bid meeting or negotiations, are incorporated into the final contract documents.
  - 2.2.8 Provide reports of completed inspections to the Contractor's Designated Safety Representative.



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2.2.9 After work is completed, receive Form 4729A, Contractor Post Job Safety Evaluation Report, from CFR, and complete/route to Safety Operations Representative for their review, ensure a copy is placed in the project file.

**2.3 Safety Operations Representative**

2.3.1 Monitor that all safety related considerations are properly addressed in the RFP. Include program reviews (e.g., confined space, fitness for duty) and safety related contract terms.

2.3.2 Work with Contract Administrator and Supply Chain to develop the RFP.

2.3.3 Review provided Contractor Safety Qualification Questionnaire from all bidders, if applicable, from Contract Administrator.

- a) Complete Contractor Safety Qualification Questionnaire (CSQQ) Responses. Share results with Contract Administrator and Supply Chain.
- b) If a contractor's incidence rate averaged over the last three years exceeds the BLS average, additional review can be made to determine whether this represents a safety performance deficiency that is sufficiently serious to justify disqualification of contractor's bid. Where multiple incidence rates are provided (i.e., national, regional) the incidence rate that most closely aligns with the work to be performed should be used.
- c) In addition to incidence rate, there may be safety program elements that disqualify the contractor. Work with Contract Administrator to monitor that other contractor safety information is reviewed and is acceptable. This will include a review and evaluation of the contractor's bid relating to the contractor's overall compliance with PPL safety requirements as specified in the RFP.
- d) If the contractor's incidence rate averaged over the last three years exceeds the BLS average and/or safety program elements are deemed unacceptable by Contract Administrator and Safety Operations Representative, Contract Administrator will be required to obtain the next higher delegation-of-authority approval to award the contract to said contractor. When the choice contractor in the bidding process is not required to maintain an OSHA log, the same process of approval (i.e. one higher DOA approval) must be followed.
- e) Return CSQQ and completed Forms to Contract Administrator.

2.3.4 Assist CFR, as needed, to conduct pre-job meeting to discuss safety requirements of the contract.



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- 2.3.5 Assist CFR, as needed, to conduct pre-job walk-through at the work location to point out and discuss known site-specific potential hazards that are associated with the work.
- 2.3.6 Review annually the compliance with this procedure to ensure that this process is being followed and review results with Business Line Management. Fill out Form titled: Annual Review of Contractor Safety Process Compliance. Retain original form in Safety Operations Representative files for three years. The number of contracts audited should be a representative sample of the total number of contracts issued for each plant/region (i.e. 5% of total).
- 2.3.7 Complete and documented inspections in the [CSafety System](#).

**2.4 Supply Chain**

- 2.4.1 Work with Contract Administrator to develop a list of bidders who will receive the RFP.
- 2.4.2 Work with Contract Administrator and Safety Operations Representative to develop the RFP.
- 2.4.3 Send out the RFP.
- 2.4.4 Receive proposals from contractors, and provide proposals to Contract Administrator.
- 2.4.5 Work with Contract Administrator and Safety Operations Representative as needed, to evaluate the proposals.
- 2.4.6 Work with Contract Administrator to determine the successful bidder.
- 2.4.7 Work with Contract Administrator to ensure that the safety requirements included in the RFP, and any revisions based on the pre-bid meeting or negotiations are incorporated into the final contract documents.
- 2.4.8 Issue the contract.

**2.5 Contract Field Representative (CFR)**

- 2.5.1 Conduct a pre-job meeting with assistance from Safety Operations Representative as requested to discuss safety requirements of the contract. Document the meeting topic and attendance.

At a minimum, the following should be discussed:



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- a) The expected safe performance and adherence to the contractor's safety program, rules, and compliance with OSHA regulations – including PPL's requirements for the specific work --
- Energy Control Process
  - Confined Space Entry Procedure
  - Scaffold training
  - Fall Protection
  - Hazard Communication, SDS, and chemical product use
  - Electrical hazards, including clearances for energized conductors, and definition of qualified/unqualified electrical workers
  - Personal Protective Equipment requirements by PPL, including protection for the specifically reviewed hazards
  - Use of white Tyvek suits
  - Operation of equipment (such as cranes, bucket trucks, forklifts) and vehicles
  - Emergency Procedures
  - Contractor confirmation of training for specifically reviewed hazards (such as asbestos awareness)
  - Site-specific requirements
  - Specific PPL EU rules/procedures to be followed
  - Identification of the Contractor's Designated Safety Representative
  - PPL contractual rights with respect to safety performance observations and work stoppage for serious safety violations

2.5.2 Lead a pre-job walk-through at the work location, with assistance from Safety Operations Representative as needed, to point out and discuss known site-specific hazards that are associated with the work. Include the discussed site-specific hazards on the form used to document attendance.

**NOTE:** This pre-job walk-through can be accomplished by a tabletop general meeting when it is not practical to walk down the specific job site.



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2.5.3 Conduct inspections at the contractor's work site. The frequency of work site inspections is determined by the Business Line with input from the Safety Operations Representative.

a) Document inspection findings in the CSafety system:

- If rating is good (G):
  - No follow-up is necessary.
- If rating is Needs Improvement (NI):
  - Attempt to resolve safety issues; notify Contractor Administrator, Safety Operations Representative, and contractor's supervisor(s) and/or Contractor's Designated Safety Representative.
  - Require, as necessary, a response from the contractor as to the actions that will be taken to resolve the safety issue.
  - Upon persistent or severe safety violations, the contract is subject to termination, and the contractor may be disqualified from future work.

b) Do not direct the work of a contractor's employees. This responsibility rests with the contractor's supervisors.

c) Suspend immediately all or a portion of the work, upon observing a workplace hazard or safety violation that puts a person at immediate risk of death or serious physical harm.

Notify contractor's supervisor(s) and/or Contractor's Designated Safety Representative.

d) Fill out, upon completion of contractor work, first portion of Form titled: Contractor Post-Job Safety Evaluation Report. Rate the overall contractor safety performance.

e) Submit this form to the Contract Administrator.

## **2.0 APPLICABILITY**

3.1 The requirements of this procedure generally apply to suppliers performing physical work for PPL Electric Utilities, whether the work is bid or sole-sourced.





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### 4.0 TERMS AND DEFINITIONS

- 4.1 **BLS Average** – Bureau of Labor Statistics shows the average OSHA incidence rate within an industry (as classified by the NAICS code under the Bureau of Labor Statistics (BLS)). BLS classifies all economic activity into twenty industry sectors and 1,170 industries by the NAICS (North American Industry Classification System) by six-digit code.
- 4.2 **Contract Administrator (CA)** – Assigned by EU Business Line management. The CA is typically accountable for working with Supply Chain on all pre-award activities and post-award activities such as scope changes and disputes. Training course [PQS 258 - Facilitating Contractor Safety CBT](#) is required.
- Note:** Some EU Business Lines may refer to the CA position as a Project Manager position.
- 4.3 **Contract Field Representative (CFR)** – May also be the Construction Supervisor that monitors contractor compliance with safety requirements and safety regulations, rules, and programs. Training is required – complete [PQS 258 - Facilitating Contractor Safety CBT](#).
- Note:** Depending on the circumstances, the Contract Administrator and the Contract Field Representative may be the same individual.
- 4.4 **Contractor Safety Qualification Questionnaire (CSQQ)** – A PPL document, filled out by contractors bidding on PPL contracts, used to gather relevant safety information from contractors. The CSQQ is part of the RFP.
- Note:** Small contractors (fewer than 10 employees) are not required to complete Section 1 (Incident Rates) of the CSQQ.
- 4.5 **Contractor's Designated Safety Representative** – A contractor employee who is responsible to ensure that the safety and health obligations in the contract are met.
- 4.6 **Experience Modification Rate (EMR)** – A ratio that compares a company's workers' compensation claims to those of other employers of similar size operating in the same type of business. (A low EMR is desirable.) The industry-wide average EMR is 1.0.
- 4.7 **Incidence Rate** – A measurement of safety performance.
- Incidence Rate = 
$$\frac{\text{\# of OSHA Recordable Injuries} \times 200,000}{\text{\# of Hours Worked}}$$
- 200,000 is the nominal number hours worked by 100 employees in one year.



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- 4.8 **RFP (Request for Proposal)** – An invitation for contractors to submit a proposal or bid on a service or commodity. Includes bidders' instructions, PPL EU proposed contract, the CSQQ, and related exhibits.

## **5.0 MAIN BODY**

### **5.1 Process Outline**

- 5.1.1 Business Line determines the sections of this procedure that apply to the contract.
- 5.1.2 Business Line designates Contract Administrator and CFR.
- 5.1.3 Supply Chain and Contract Administrator develop a list of bidders who will receive the RFP.

### **5.2 Pre-award Activities**

- 5.2.1 Contract Administrator works with Safety Operations Representative to monitor that all safety related considerations are properly addressed in the RFP. Include program reviews (e.g., confined space, fitness for duty) and safety related contract terms.
- 5.2.2 Supply Chain sends out the RFP (including CSQQ, as necessary).
- 5.2.3 Contract Administrator schedules and conducts pre-bid meeting (as necessary).
- 5.2.4 Supply Chain receives proposals from contractors (including CSQQ, if requested).
- 5.2.5 Supply Chain sends proposals to Contract Administrator
- 5.2.6 If the Contractor Safety Qualification Questionnaire is included with the proposals:
  - a) Contract Administrator combines Contractor Safety Qualification Questionnaire and submits them to Safety Operations representative.
  - b) Safety Operations Representative fills out [Form 5252 Contractor Safety Qualification Questionnaire \(CSQQ\)](#). Data is returned to Contract Administrator to determine whether safety requirements are met.



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5.2.7 Contract Administrator and Supply Chain determine the successful bidder.

5.2.8 Contract Administrator and Supply Chain ensure that the safety requirements are incorporated into the final contract documents.

5.2.9 Supply Chain issues the contract to the awarded contractor.

### **5.3 Post-award Activities**

5.3.1 CFR schedules and conducts pre-job meeting and pre-job walkthrough (as needed) with contractor. Identify Contractor's Designated Safety Representative. Document the meeting topic and attendance.

### **5.4 After Contractor Begins Work**

5.4.1 Safety Operations Representative and CFR conduct inspections at the contractor's work site

5.4.2 Document findings in [CSafety System](#).

5.4.3 Contract Administrator or CFR provides reports of completed [CSafety System](#) information to the Contractor's Designated Safety Representative.

### **5.5 Post-Work**

5.5.1 CFR initiates [Form 4729 Contractor Post-job Safety Evaluation Report](#).

5.5.2 Contract Administrator reviews form and follows up as necessary.

5.5.3 Safety Operations Representative reviews form, and retains for three years.

## **6.0 REFERENCES**

6.1 Occupational Safety and Health Regulations: All applicable regulations in 1910 and 1926 standards.

6.2 PPL Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS - N/A**



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### **8.0 TRAINING / SAFETY**

- 8.1 [PQS 258 - Facilitating Contractor Safety CBT](#)

### **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

### **10.0 ATTACHMENTS**

- 10.1 [CSafety System](#)
- 10.2 [TDI Contractor \(Augmented Employee\) Onboarding Checklist](#)
- 10.3 [Form 5252 Contractor Safety Qualification Questionnaire \(CSQQ\)](#)
- 10.4 [Form 4651 Contractor Safety Observation Checklist](#)
- 10.5 [Form 4729 Contractor Post-job Safety Evaluation Report](#)
- 10.6 [Form 5159 Annual Review of Contractor Safety Process Compliance](#)
- 10.7 Attachment A: Contractor Safety Process Flow Chart

### **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



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## 12.0 RECORD RETENTION

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<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer and Brian Kostik			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed for updated language and review protocol.			

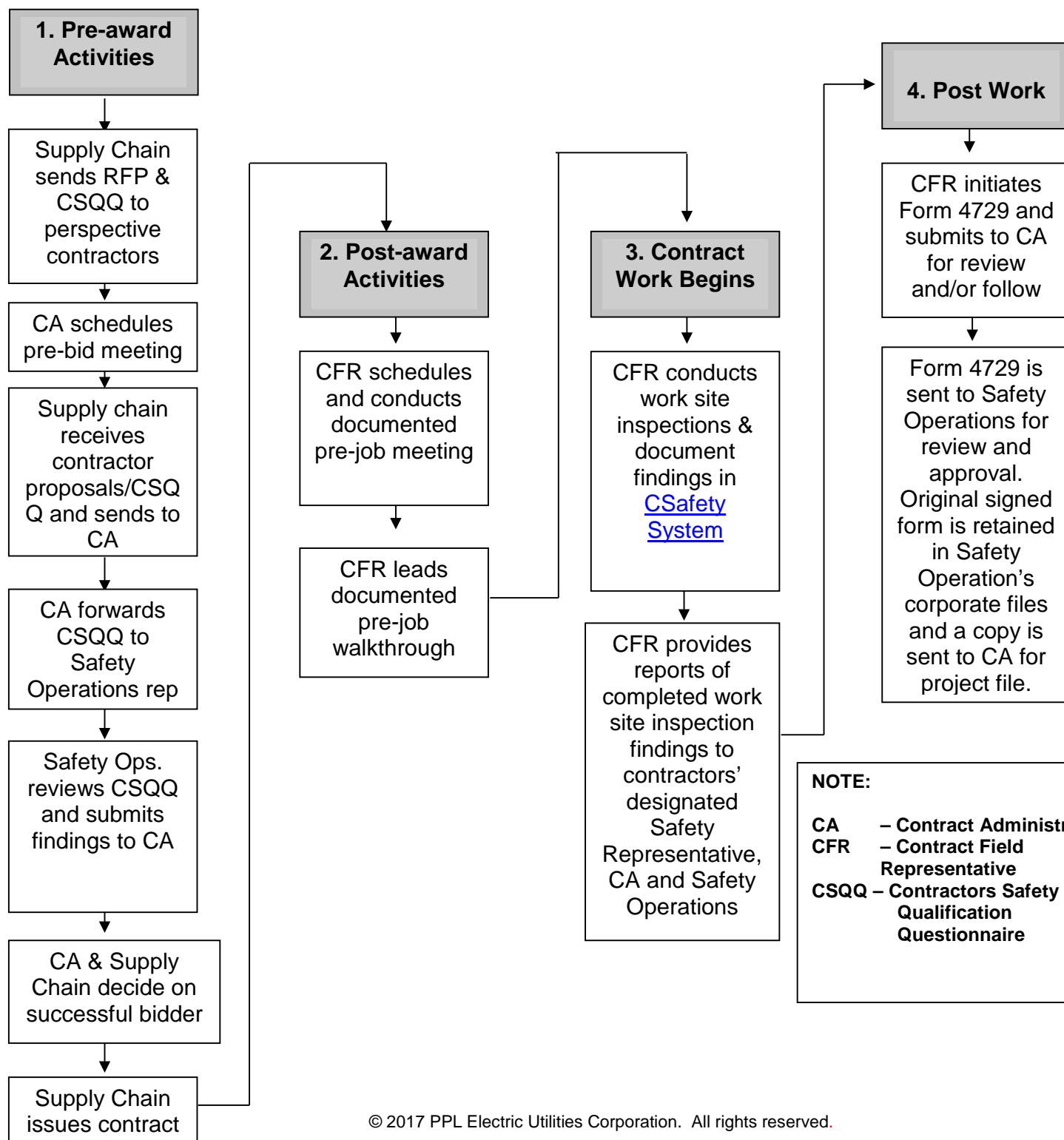
<b>Rev</b>	00	<b>Date</b>	06/26/2012	<b>Effective</b>	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			




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### Attachment A - Contractor Safety Process Flow Chart



 PPL Electric Utilities	<p align="center"><b>SP 20</b>  <b>SAFETY PROCEDURE</b>  <b>RIGGING</b></p>	<p>0000-000-PR-8018                  Custom ID: SP 20                  Revision: 03                  Effective Date: 02/14/2018                  Page 1 of 28</p>
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### **1.0 PURPOSE/SCOPE**

- 1.1. This procedure defines the standard work process for rigging operations on PPL projects managed or overseen by PPL personnel. The purpose is to ensure that lifting personnel, and riggers meet minimum qualifications, and that rigging/lifting activities are performed in a consistent and safe manner.

### **2.0 RESPONSIBILITY**

#### **2.1 Competent Person Rigger**

- 2.1.1 The Competent Person Rigger is responsible to conduct rigging in accordance with this procedure and applicable federal, state, county, and local regulations, including job site-specific requirements, as necessary. He/she shall identify existing and predictable hazards in the surroundings or working conditions and take prompt corrective measures to eliminate or correct the condition.

#### **2.2 Business Line**

- 2.2.1 The Business Line is responsible to ensure compliance with this policy. This is accomplished by reviewing rigging plans (as applicable); coordinating review by a Certified Engineer (if applicable); and monitoring both internal and subcontractor activities associates with this policy.

#### **2.3 Safety Operations**

- 2.3.1 Safety Operations is responsible for determining regulatory safety requirements and providing assistance (technical and program reviews) to the client department as needed.

### **3.0 APPLICABILITY**

- 3.1 This procedure establishes safety and health guidelines pertaining to the proper use, inspection, and training requirements of PPL Electric Utility employees who are qualified to perform rigging operations.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 Abnormal operating conditions - environmental conditions that are unfavorable, harmful, or detrimental to or for rigging equipment, such as excessively high or low ambient temperatures; exposure to weather; corrosive fumes; dust laden or moisture laden atmospheres; and hazardous locations.
- 4.2 Abrasion - the mechanical wearing of a surface resulting from frictional contact with other materials or objects.





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- 4.3 Angle of choke - angle formed in sling body as it passes through the choking eye.
- 4.4 Angle of loading - slope of a leg of a sling, may be measured from horizontal or vertical plane. When angle of loading is less than 5 degrees from vertical, the load may be considered a vertical load.
- 4.5 Authorized - approved by a duly constituted administrative or regulatory authority.
- 4.6 Body - that part of a sling that is between the end fittings or loop eyes.
- 4.7 Braided wire rope - a rope formed by plaiting component wire ropes.
- 4.8 Braided wire rope sling - a sling made from braided rope.
- 4.9 Bridle sling - a sling composed of multiple legs (branches) with the top ends gathered in a fitting that goes over the lifting hook.
- 4.10 Cable laid rope - a cable composed of six wire ropes laid as strands around a wire rope core.
- 4.11 Competent Person Rigger - A PPL or subcontractor employee who is responsible for attaching rigging gear, (i.e. shackles, slings, etc.) from the load to the mechanical lifting equipment. This person shall be knowledgeable and have experience, background and/or training in rigging hoisting and lifting methods; is capable of identifying existing and predictable hazards in the surroundings or working conditions; and has authorization to take prompt corrective measures to eliminate or correct the condition. (Line up with Crane GSP Definition)
- 4.12 Design factor - ratio between minimum breaking strength and rated capacity of rigging equipment.
- 4.13 Designated - selected or assigned by the employer.
- 4.14 End fitting - terminal hardware on the end of sling.
- 4.15 Eye opening - the opening in the end of a sling for the attachment of hook, shackle, or other lifting device.
- 4.16 Hitch, basket - a method of rigging a sling in which the sling is passed around the load and both loop eyes or end fittings are attached to the lifting device.
- 4.17 Hitch, choker - a method of rigging a sling in which the sling is passed around the load and the eye attached to the body of the sling with a device such as a shackle.
- 4.18 Hitch vertical - a method of rigging a sling in which the load is attached to the loop eye or end fitting at one end of the sling and the other end is attached to the lifting device.



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### 4.19 Inspections –

4.19.1 Frequent inspection: Daily or each shift prior to use and during use.

4.19.2 Periodic inspection: One to 12 month intervals, or as specifically recommended by the manufacturer or a qualified person.

4.20 Lifting - The process of lifting or positioning equipment, components, or materials with a machine.

4.21 Load - Any material, component, or equipment that is lifted, moved, or repositioned.

4.22 Lifting Device - Any machine or device used to lift a load from its supporting surface. Such devices include, but are not limited to the following; crane, hoist, hoisting system, chain fall, come-along, jack, jacking system, levers, pulley system, etc.

4.23 Rated load - the maximum allowed working load established by the manufacturer of the device

4.24 Rigging - Rigging is defined as:

4.24.1 The hardware or equipment used to safely attach a load to a lifting device.

4.24.2 The process of safely attaching a load to a hoist by means of adequately rated and applied slings. Slings include wire ropes, chains, synthetic web, and metal mesh made into forms, with or without fittings and other approved tools/materials, for handling loads.

4.25 Rigging Plan - A documented plan detailing the lift work operation, equipment utilized, load to be lifted, minimum clearances, rigging methods, soil conditions, etc. as described in section 6.1.3.

4.26 Service, normal - service that involves use of loads within the rated load.

4.27 Service, severe - Service that involves normal service coupled with abnormal operating conditions.

4.28 Strength, minimum breaking - minimum load at which a new rigging component will break when loaded to destruction.

## 5.0 MAIN BODY

### 5.1 Lifts (Routine Lifts)

5.1.1 All lift beams and spreader bars must be designed, fabricated and used in accordance with OSHA and ASME requirements or applicable local



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code. Lifting beams and spreader bars shall be load tested and inspected in accordance with OSHA regulations.

- 5.1.2 Lifting lugs and attachment points provided and installed by the equipment supplier shall be inspected for visual defects or discrepancies prior to lifting the equipment.
- 5.1.3 Rated lifting capacities identified by the manufacturer on the rigging equipment or supplied with the rigging equipment shall supersede any generic capacity chart provided in a rigging manual.
- 5.1.4 It shall be the user department's responsibility to maintain the manufacturer rating information such as tags etc. in a legible condition.

### **5.2 Lifts (Non-Routine)**

- 5.2.1 A written rigging plan and supporting calculations should be prepared and approved prior to conducting all non-routine lifts.
- 5.2.2 Rigging plans shall be reviewed and approved by a competent person.
  - a. Rigging Plans:
    - Vendor drawings and associated data can be reviewed for information applicable to the preparation of rigging plans. Applicable information includes equipment weight, location of center of gravity, recommended or specified lifting points, and special handling requirements. This information should be verified and double-checked using sources such as fabricator drawings, checked calculations, similar units previously handled, and actual shipping weights. Whenever possible, the actual scale weight information should be obtained.
    - The following information is offered as a recommendation to be included for each non-routine lift, as applicable.
      - A list of the crane or hoisting equipment to be used in the work operation.
      - A sketch showing the position and travel path of equipment, hoisting equipment, lift crane, tailing crane, initial location of the item to be lifted, and the final "set" position of the lifted item.
      - A layout of the work area, including the locations of all obstacles and potential interferences.
      - Haul and lift path minimum clearances, turning radius, and clearance requirements from existing facilities, utilities, and overhead power lines.
      - Definition of the item to be lifted including verified weight and authorized attachment or lift points.



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- Equipment manufacturer drawings showing component weight, shipping skid weight, designated rigging attachment points, and center of gravity should be attached to the rigging plan.
- Definition of special soil preparation and crane mat requirements.
- A sketch showing the locations of underground utilities that could affect the haul route and/or rigging work operation or that require special clearances or cribbing to perform the work.
- Rigging equipment to be used for the rigging operation, including slings, spreader beams, shackles, hooks, and other components in the load chain.
- Calculations used to determine the forces applied to each rigging component must be provided for all critical lifts.
- Load capacity charts and notes for cranes or other equipment used to perform the lift. These shall be posted in the crane and referenced in the rigging plan. It is important that the actual configuration of the crane, including line parting and size, boom and jib length, counterweight size, and load block size are factored into the parameters used to determine lifting capacity.
- A description of the communication method to be used by equipment operators and rigging crews during completion of the lift.
- Special considerations, such as the effects of wind on the ability of crews to safely complete the lift.
- Any special precautions that the work crew must be aware of prior to making the lift (e.g. removal of temporary shipping skids prior to lifting).

### **5.3 Pre-Lift Checks**

5.3.1 For all lifts, the Competent Person Rigger(s) shall complete a documented Tailboard prior to executing the lift.

5.3.2 For all lifts made with a crane, the following pre-lift safety checks shall be performed:

- a. The Operator shall perform and document a thorough (daily) inspection to ensure lifting equipment and systems are in good working condition and does not require repair, adjustment, or lubrication prior to use.
- b. Inspection and verify equipment supplier specified lift points.
- c. Inspection of equipment for factors that may add to the total weight of the lift, such as ice or excess moisture.



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- d. A pre-lift discussion shall take place between the rigging crew and equipment operator(s) prior to making the lift. Clear communications between the Operator and the Rigging crew shall be emphasized.
- e. Evaluation of weather conditions to ensure the lift can be made safely.
- f. Inspection of attachments and rigging equipment including lugs, slings, shackles, and spreader beams.
- g. Tag lines are attached to the load. If tag lines are not practical, other means must be provided to control of the load.
- h. Temporary barricades when appropriate, are placed around the work area and that adjacent work crews are notified of the rigging work operation.
- i. For non-routine lifts, the following additional safety check shall be performed: Rigging crew and equipment operator(s) shall verify lifting equipment and rigging is set up per the rigging plan.

### **5.4 Post Lift**

5.4.1 Once the lift has been safely completed and the load has been secured in its final position:

- a. The rigging crew shall remove all tag lines, rigging, and temporary barriers.
- b. Equipment operator(s) shall remove all hauling and lifting equipment from the area (if no longer needed).
- c. Work area shall be secured for future work.

### **5.5 Competent Person Rigger (Process should line up with Crane GSP Rigger)**

5.5.1 The Competent Person Rigger shall:

- a. Be present at the work site and authorized to take prompt corrective action to ensure that substandard or unsafe equipment or methods are immediately eliminated or corrected.
- b. Comply with applicable OSHA standards and federal, state, county, and local regulations, including customer restrictions and job site specific requirements, as necessary.
- c. Ensure that rigging hardware and materials are inspected before use, configured correctly, and properly attached to the lifting equipment.



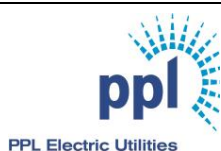
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- d. Ensure the availability of information, procedures, and equipment necessary to move loads without injury to personnel and without damage either to the site or the equipment.
- e. Ensure that substandard or unsafe equipment or methods are not used to move loads.

### **5.6 Safe Work Practices**

- 5.6.1 Only slings with suitable characteristics for the type load, hitch, and environment shall be selected.
- 5.6.2 The weight of the load shall be within the rated load (rated capacity) of the sling.
- 5.6.3 Slings shall not be shortened or lengthened by knotting, wire rope clips, or other methods not approved by the sling manufacturer.
- 5.6.4 Slings that are damaged shall not be used unless inspected and accepted as usable under a periodic inspection.
- 5.6.5 Slings shall be hitched in a manner providing control of the load.
- 5.6.6 Sharp corners in contact with the sling shall be padded with material of sufficient strength to protect the sling.
- 5.6.7 Portions of the human body shall be kept from between the sling and the load and from between the sling and the crane hook or hoist hook.
- 5.6.8 Personnel shall be kept clear of loads about to be lifted and of suspended loads.
- 5.6.9 Shock loading is prohibited.
- 5.6.10 Slings shall not be pulled from under a load when the load is resting on the sling.
- 5.6.11 Slings should be stored in an area where they are not subjected to mechanical damage, corrosive action, moisture, extreme heat, or kinking.
- 5.6.12 Twisting and kinking the sling legs shall be avoided.
- 5.6.13 The load applied to the hook shall be centered in the base (bowl) of the hook to prevent point loading on the hook unless designed for point loading.
- 5.6.14 During lifting with or without load, personnel shall be alert for possible snagging.



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- 5.6.15 In a basket hitch, the load shall be balanced to prevent slippage.
- 5.6.16 The slings' legs shall contain or support the load so that the load remains under control.
- 5.6.17 Slings shall be long enough so that the rated capacity is adequate when the sling angle is taken into consideration.
- 5.6.18 Slings shall not be dragged on the floor or over an abrasive surface.
- 5.6.19 In a choker hitch, slings shall be long enough so that the choker fitting chokes on the wire rope body and never on the other fitting.
- 5.6.20 Do not inspect a sling by passing bare hands over the wire rope body. Broken wires, if present, may puncture the hands.
- 5.6.21 Fiber core wire rope shall not be subjected to degreasing or a solvent because of possible damage to the core.
- 5.6.22 Single leg slings with hand tucked splices can be un-laid by rotation. Care should be taken to minimize sling rotation.
- 5.6.23 An object engaging the eye of a loop eye sling shall not be greater, in width then one half the length of the eye.
- 5.6.24 Suspended loads shall be kept clear of all obstructions.
- 5.6.25 Review site specific work methods/procedures for acceptable rigging beyond this GSP.

**5.7 Wire Rope Slings**

- 5.7.1 Rated load for wire rope slings shall be based on the following:
  - a. Sling rating;
  - b. Type of hitch (straight pull, choker hitch, or basket hitch);
  - c. Angle of loading; and
  - d. Diameter of curvature around which the sling is bent.
- 5.7.2 It is recommended Wire Rope Slings should have permanently affixed durable identification such as the information listed below.
  - a. Type
  - b. Size
  - c. Length
  - d. Model and serial number
  - e. Rated load and angle upon which the rating is based
  - f. PPL Sling Number



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- 5.7.3 If a wire rope sling is not equipped with an identification tag the appropriate capacity chart in the rigging manual shall be referenced for the sling's working load limit for attachment configuration to be utilized.

## 5.8 Wire Rope Clips


- 5.8.1 Wire Rope clips shall not be used to fabricate wire rope slings except where applications of slings prevents the use of prefabricated slings or where the specific application is designed by a qualified person.
- 5.8.2 Only drop-forged clips shall be used when wire rope clips are used to form the eye of a sling.
- 5.8.3 When U bolt type drop forged clips are used to form an eye or a splice in wire rope they shall be installed with the U of the bolt over the short end of the wire rope and the clamp and the nuts on the end which carries the load.
- 5.8.4 Clips shall be spaced by a distance equal to six times the diameter of the wire rope.
- 5.8.5 Wire rope clips shall be tightened and properly torqued as per the manufacturer's recommendations.
- 5.8.6 When the eye of a sling or a splice is made with drop forged clips, bolts shall be periodically checked for tightness and for indication of slipping.
- 5.8.7 The minimum number of U-bolt style drop forged clips needed to form the eye of a sling or splice a wire rope, shall be used as per the chart below or from information supplied by the manufacturer.

**Chart 1:**

<b>Clip Size Inches</b>	<b>Rope Size Inches</b>	<b>Minimum Number of Clips</b>	<b>Torque in Foot Lbs.</b>
1/4	1/4	3	15
5/16	5/16	3	30
3/8	3/8	3	45
7/16	7/16	3	65
1/2	1/2	3	65
9/16	9/16	3	95
5/8	5/8	3	95
3/4	3/4	4	130
7/8	7/8	4	225
1	1	5	225
1-1/8	1-1/8	6	225
1-1/4	1-1/4	7	360
1-3/8	1-3/8	8	360

**\*NOTE:** If a pulley (sheave) is used for turning back the wire rope, one additional clip shall be added.



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**\*\*NOTE:** The tightening torque values shown in the table are based upon the threads being clean, dry, and free of lubrication.

- 5.8.8 The minimum number of drop forged Fist Grip Clips needed to form the eye of a sling or splice a wire rope, shall be used as per the chart below or from information supplied by the manufacturer.

**Chart 2:**

<u>Clip Size</u> <u>Inches</u>	<u>Rope Size</u> <u>Inches</u>	<u>Minimum</u> <u>Number of Clips</u>	<u>Torque</u> <u>in Foot Lbs.</u>
1/4	1/4	3	30
5/16	5/16	3	30
3/8	3/8	3	45
7/16	7/16	3	65
1/2	1/2	3	65
9/16	9/16	3	130
5/8	5/8	3	130
3/4	3/4	4	225
7/8	7/8	4	225
1	1	5	225
1-1/8	1-1/8	6	360
1-1/4	1-1/4	7	360
1-3/8	1-3/8	7	500

**\*NOTE:** If a pulley (sheave) is used for turning back the wire rope, add one additional clip.

**\*\*NOTE:** The torque values shown are based on the threads being clean, dry, and free of lubrication.

- 5.8.9 Slings having eyes formed by, or wire ropes with a splice formed by, drop forged wire rope clips shall be used for only 80% of the safe working load of the wire rope.
- 5.8.10 Slings made with wire rope clips should not be used as a choker hitch.
- 5.8.11 When wire rope clips are used, the attachment of them, including the proper number of clips used and the torque required to tighten and re-tighten, shall be in accordance with the procedures recommended by the clip manufacturer.

## 5.9 Effects of Environment

- 5.9.1 Fiber core wire rope slings of all grades shall not be exposed to temperatures in excess of 180 degree F (82 degree C).
- 5.9.2 Wire rope slings of any grade when to be used at temperatures above 400 degree F (204 degree C) or below -60 degree F (-51 degree C) should be done only after consulting the manufacturer.



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- 5.9.3 The strength of slings can be affected by chemically active environments as sling materials may be susceptible to damage from caustic or acid substances or fumes; strongly oxidizing environments attack all common sling materials. The manufacturer should therefore be consulted before slings are used in chemically active environments.

### **5.10 Sling Inspection**

- 5.10.1 Frequent Inspections - Each shift before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Observations should cover items such as:

- a. Distortion in the rope sling such as kinking, crushing, understanding, main strand displacement, or core protrusion.
- b. Loss of rope diameter in short rope lengths or unevenness in outer strands.
- c. General corrosion.
- d. Broken or cut strands.
- e. Number, distribution, and type of visible broken wires.

- 5.10.2 Periodic Inspections - This inspection shall be conducted by designated personnel, and conducted at least annually.

### **5.11 Removal from Service Criteria**

- 5.11.1 Conditions such as the following should be sufficient reason for questioning sling safety and for consideration for replacement.

- a. For strand laid and single part slings ten randomly distributed broken wires in one rope lay; Wear or scraping of one-third the original diameter of outside individual wires; Kinking, crushing, bird caging or any other damage resulting in distortion of the rope structure; Evidence of heat damage; End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected; Severe corrosion of the rope or end attachments.

### **5.12 Synthetic Web Slings (Including webbing on a Web Lug-All)**

- 5.12.1 This section applies to slings fabricated by sewing of woven synthetic webbing of nylon or polyester type yarns, for the purpose of hoisting, lifting, and general material handling, in basic sling types.

#### **5.12.2 Identification**



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- a. Each sling shall be permanently marked to show:
  - Name or trademark of manufacturer.
  - Rated loads (rated capacity) for the type of hitches used.
  - Type of synthetic web material.

### **5.12.3 Effects of Environment**

- a. Chemically active environments, such as acids and caustics, can affect the strength of slings. The manufacturer should be consulted before slings are used in chemically active environments.
- b. Nylon and polyester slings shall not be used at temperatures in excess of 180 degree F (82 degree C). (1910.184 (i)(7))
- c. Polypropylene slings shall not be used at temperatures in excess of 200 degree F (93 degree C).
- d. Nylon web slings shall not be used where fumes, vapors, sprays, mists, or liquids of acids or phenolics are present.
- e. Polyester and polypropylene web slings shall not be used where fumes, vapors. Sprays, mists or liquids of caustics are present.
- f. Nylon and polyester slings should be stored in locations to reduce exposure to Ultra Violet Radiation.

### **5.12.4 Inspections**

- a. Frequent Inspections - Each shift before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer.
- b. Periodic Inspections - This inspection shall be conducted by designated personnel, and conducted at least annually.

### **5.12.5 Removal from Service Criteria**

### **5.12.6 Do not attempt to repair Synthetic Web Slings.**

### **5.12.7 Synthetic web slings shall be immediately removed from service if any of the following conditions are present:**

- a. Manufacturers capacity tag missing.
- b. Melting, charring or chemical damage of any part of the sling.
- c. Holes, cuts, tears, or snags.
- d. Broken or worn stitching in load bearing splices.



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- e. Excessive abrasive wear.
- f. Knots in any part of the sling.
- g. Excessive pitting or corrosion, or cracked, distorted, or broken fittings.
- h. Red wear indicator fibers are showing.
- i. Extreme Ultra Violet(UV) damage is present.
- j. Other visible damage that causes doubt as to the strength of the sling.

### **5.12.8 Care of Nylon Slings and Lanyards**

5.12.9 Polyester does not show any strength loss when wet. Nylon, however, does exhibit a slight strength loss. The performance of slings manufactured from either type of material will not be affected when used under normal recommended guidelines, even if they completely saturated in water.

5.12.10 Synthetic slings should only be cleaned when absolute necessary. Repeated washing of the synthetic slings may subject them to more fiber to fiber abrasion than before washing. This process may reduce the life expectancy of the synthetic sling.

5.12.11 Standard detergents and dry cleaning solvents may be used. Since clothes are often made from fabrics of polyester and nylon, these solvents have been especially developed to clean these materials without degrading them. However, the use of bleaching agents, or detergents containing bleaching agents or oxidizers, is not recommended. Chlorine, for example, will completely degrade nylon, when exposed to it, in just a few hours.

5.12.12 Drying slings should be hung to be air-dried. It is not recommended to dry them in a clothes dryers. The tumbling of the slings adds additional wear to the slings.

5.12.13 Employees shall not attempt to attach end fittings or form eyes in webbing. 1910.184(i)(4) Attachment of end fittings to webbing and formation of eyes. Stitching shall be the only method used to attach end fittings to webbing and to form eyes. The thread shall be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

\*NOTE: Manufactures have different criteria for what they consider to be acceptable temperatures that slings are exposed to for the drying process.



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### **5.13 Twin Path Synthetic Slings**

#### **5.13.1 Identification**

- a. Twin Path Synthetic Slings shall have permanently affixed durable identification.
- b. Name or trademark of manufacturer.
- c. Rated loads (rated capacity) for the type of hitches used.
- d. Type of synthetic web material.

#### **5.13.2 Effects of Environment**

- a. When not in use, slings should be stored in a clean, dry place. Heat sources and non-ventilated places should be avoided.
- b. Twin Path Synthetic slings should be stored in locations to reduce exposure to Ultra Violet Radiation.
- c. Chemically active environments can affect the strength of Twin Path Slings.
- d. Slings with polyester or cover-max covers shall not be exposed to temperatures above 82 degree C (180 degree F).

#### **5.13.3 Inspection**

- a. Frequent Inspections - Each shift before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer.
- b. Periodic Inspections - This inspection shall be conducted by designated personnel, and conducted at least annually.
- c. Removal from Service Criteria
- d. Tell-Tails should extend past the tag area of each sling. If both Tell-Tails are not visible remove the sling from service. If the Tell-Tails show evidence of chemical degradation, remove the sling from service. Send to manufacturer for repair evaluation.
- e. Slings with evidence of cutting or tearing of the outer cover shall be removed from service and sent to manufacturer for evaluation.
- f. Evidence of heat damage.



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- g. Slings should be examined throughout their length for abrasion, cuts, heat damage, fitting distortion or damage, tag legibility, and if any doubts are held by the inspector the sling should be removed from service. Core integrity is determined by hand inspection of the entire sling or by fiber-optic light transfer if this type of Tell-Tail is installed in the sling.

### 5.14 Alloy Steel Chain Slings

#### 5.14.1 Identification

- a. Alloy steel chain slings shall have permanently affixed durable identification stating type, size, length, manufacturer's grade and serial number if present, rated load and angle upon which the rating is based and PPL Sling Number.
- b. Makeshift fasteners, hooks, or links formed from bolts, rods, etc., or, other attachments shall not be used.
- c. Hooks, links, oblong links, pear shaped links, welded or mechanical coupling links or other attachments shall have a rated load at least equal to that of the alloy steel chain with which they are used.

#### 5.14.2 Effects of Environment

- a. When the chain becomes heated to a temperature in excess of 600 degree F (316 degree C) rated loads shall be reduced in accordance with the chain manufacturer recommendations regarding usage both while heated and after being heated. The chain manufacturer should be consulted when chain slings are to be used in temperatures below -40 degree F (-40 degree C) or below.
- b. The strength of slings can be affected by chemically active environments as sling materials may be susceptible to damage from caustic or acid substances or fumes. Strongly oxidizing environments attack all common sling materials. The manufacturer should be consulted before slings are used in chemically active environments.

#### 5.14.3 Inspection

- a. Frequent Inspections - Each shift before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer.
- b. Annual Inspections - [Form 5279](#) shall be completed each year, and retained for one year (refer to Attachments). Completed



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inspection forms shall be entered and stored in CCATS (refer to Attachment B). Inspection must be conducted by competent personnel who are trained on the process of chain sling inspections.

5.14.4 Removal from Service Criteria Inspections shall cover items such as listed below. Where defects or deformations are present, the slings shall be immediately removed from service.

- a. Chain attachments for wear, nicks, cracks, breaks, gouges, stretch, bends, weld spatter, discoloration from excessive temperature, and throat openings of hooks.
- b. Chain links and attachments should hinge freely with adjacent links.
- c. Latches on hooks, if present, should hinge freely and seat properly without evidence of distortion.

### **5.15 Hooks**

5.15.1 When a latch is provided it shall be designed to retain such items as, but not limited to, slings and chains under slack conditions. The latch is not intended to support the load.

5.15.2 Attachments such as handles, latch supports, etc. shall not be welded to a finished hook in field applications. If welding of an attachment such as these is required, it shall be done in manufacturing or fabrication prior to any required final heat treatment.

### **5.15.3 Inspection**

- a. Each hook shall be carefully inspected prior to and during each use for the following and shall be removed from service if any of the following defects are recognized.
- b. Distortion such as bending, twisting, or increase in throat opening.
- c. Hooks whose throat opening has been increased, or whose tip has been bent out of the plane from the body or in any other way distorted or bent.
- d. Wear. Cracks, severe nicks, or gouges.
- e. Latch engagement, damaged, or a malfunctioning latch. If the latch fails to close the throat opening, the hook shall be removed from service until repairs are made.
- f. Hook attachment and securing means.



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- 5.15.4 If hooks are painted by the manufacturer the visual inspection shall take this coating into consideration.
- 5.15.5 Surface variations can disclose evidence of heavy or severe service to require more detailed analysis. This surface condition may then call for stripping the paint.
- 5.15.6 Safe Operating Practices
  - a. It shall be determined that the weight of the load to be lifted dose not exceed the lesser of the load rating of the hook or the load rating of the equipment of which the hook is a part
  - b. Shock loading shall be avoided.
  - c. Loads shall be centered in the base (bowl/saddle) of the hook to prevent point loading of the hook.
  - d. Hooks shall not be used in such a manner as to place a side load or back load on the hook.
  - e. When using a device to close the throat opening of the hook, care shall be taken that the load is not closed by the closing device.
  - f. Hands, fingers and body shall be kept from between hook and load.
  - g. Duplex (sister) hooks shall be loaded equally on both sides unless the hook is specifically designed for single loading.
  - h. If duplex (sister) hook is loaded at the pin hole instead of at the two saddles, the load applied shall not exceed the rated load that would normally be shared by the two saddles or the rated load of the supporting equipment.
  - i. The use of a hook with a latch does not preclude the inadvertent detachment of a slack sling or a load from the hook. Visual verification of proper hook engagement is required in all cases.
  - j. When placing two or more sling legs in hook, make sure the angle from the vertical to the outermost leg is not greater then 45 degrees, and the included angle between the legs does not exceed 90 degrees.
  - k. For angles greater then 90 degrees, or more then two slings, a master link or bolt type shackle shall be used to attach the legs of sling too the hook.





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- I. Never repair, alter, rework, or reshape a hook by, welding, burning, heating or bending.

### **5.16 Shackles**

- 5.16.1 Ratings for shackles are for in-line loading with the load perpendicular to the pin or bolt.
- 5.16.2 Shackles under 85-ton working load rating the load can be a concentrated point load. The load can be pin to pin, pin to eye, etc. For shackles 85-ton working load rating and larger the "pad eye" width must be 80% or greater of the ear spread, or they must be de-rated.
- 5.16.3 The load must be reasonably centered on the pin or bolt - if needed, spacers can be used to center.
- 5.16.4 Inspection
  - a. Each shackle shall be inspected before and during each use for evidence of:
    - Cracks and corrosion.
    - Peening nicks and gouges in the pin or shackle body.
    - Distortion such as bends, twists, or spreading. Remove from service any shackle that has any detectable bending or twisting out of the natural plane.
    - Weld splatter or heat damage.
    - Damaged or worn threads - Check that it is the proper pin. Never replace a pin with a bolt or any other fastener.
    - Straightness of shackle pin or bolt.
    - Wear of pin and or body of shackle.

Note: Reduction of stock must not exceed 5% of the cross sectional dimension.

### **5.15.4 Safe Operating Practices**

- a. Shackle load rating is based on load regardless of included angle, as long as that included angle is less than 120 degrees.
- b. Round pin shackles (line hardware shackles) shall not be used for rigging purpose. Only proper rigging shackles screw pin design or bolt and nut design shall be used for rigging.
- c. Round pin shackles shall not be used in an application where the load is applied at in any direction or angle not in line with the centerline of the shackle.



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- d. Screw pin shackles can be used in tie down, towing, suspension or lifting applications.
- e. Screw pin shackles can be used for applications involving side load applications. Reduced working load limits are required for side loading applications.
- f. Screw pin shackles are not to be used in an application where the load can slide across the pin. This action may cause the pin to rotate and become disengaged.
- g. Bolt type shackles are recommended for permanent installation, where environmental conditions include vibration, cyclic loading, or shock loading.
- h. When utilizing a shackle as a fitting for a choker hitch the pin of the shackle shall always be in the eye with the bow of the shackle over the body of the sling. This will prevent movement of the pin.
- i. Bolt type shackles can be used in tie down, towing, suspension or lifting applications.
- j. Bolt type shackles can be used for applications involving side load applications. Reduced working load limits are required for side load applications.
- k. Bolt type shackles can also be used in applications where the load may slide on the pin of the shackle, causing the pin to rotate.
- l. Loading on the shackle pin should be in the center. This can be accomplished with the use of spacers to hold the loading point in place.
- m. Damage to shackles can be caused by:
  - Wear-- heavy use, dragging across floors.
  - Overloading-- shock loading, too heavy a load, too large and angle on slings.
  - Reduction of bearing area-- wear, corrosion.
  - Damage to threads-- wear, corrosion, overloading.
  - Distortion-- side loading, overloading, shock loading.
- n. If angle of sling loading on the shackle is 45 degrees from the centerline of the shackle; a 30% reduction is needed in load limit.
- o. If angle of sling loading on the shackle is at 90 degrees from the centerline of the shackle, a 50% reduction is needed in the load limit.



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### 5.16 Overhead Hoists (underhung)

5.16.1 Hoist shall not be loaded in excess of their rated load.

5.16.2 All overhead hoists in use shall meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer. (1926.554(a)(6))

#### 5.16.3 Inspection

- a. Frequent Inspections - Hand chain operated hoists, electric and/or air powered hoists shall be inspected each shift before use by a competent person.
- b. Inspections should cover items such as listed below. Where defects or deformations are present, the hoist shall be immediately removed from service.
  - All functional operating mechanisms for maladjustment and unusual sounds;
  - Hooks;
  - Load chain, for smooth feeding into and away from sprockets;
  - Chain and mating parts for wear distortion, gouges, nicks, weld splatter, corrosion, distorted links, or other damage;
  - Hoist chain for proper reeving;
  - Limit devices for proper operation;
  - Air lines, valves and other parts for leakage;
  - Electrical cords and plugs for their condition;
  - Control marking to indicate direction of travel;
  - Electric and air operated hoist controls shall return to off position when released;
  - Manufacturer name and manufacturer's model or serial number; and
  - Wire rope condition. 13.2.
- c. Periodic Inspections - All hoists shall be inspected annually by the retest date attached or by date of written documentation indicating last annual inspection.
- d. Safe Operating Practices Before Operating Hoist:
  - The operator shall be familiar with all operating controls of the hoist.
  - If any adjustments or repairs are necessary, or any defects are known, the operator shall report this promptly to the designated person.
  - The operator shall not operate a hoist that bears an out of order sign.



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- The operator shall not adjust or repair a hoist unless qualified to perform maintenance of hoist.
- The chain or rope shall not be used for a ground for welding.
- A welding electrode shall not be touched to the chain or rope.
- Hand chain operated hoists shall only be operated with hand power.

e. Applying the Load:

- The hoist rope or chain shall not be wrapped around the load in place of a sling.
- The load shall be attached to hook by suitable means.
- The sling or other device shall be properly seated in the base (saddle) of the hook.
- The load shall not be applied to the point of the hook.
- Before moving the load the operator shall assure chains or wire rope are not kinked or twisted or that multiple part chains or rope are not twisted around each other.
- The hoist shall not be operated unless rope or chain is seated properly on the drum, sheaves, or sprockets.
- The operator shall not pick up a load in excess of the rated load appearing on the hoist or load block.
- A hoist overload-limiting device shall not be used to limit the maximum load to be lifted.
- Specific attention shall be given to balancing the load and hitching or slinging to prevent slipping of the load.

f. Moving the Load:

- The operator shall not engage in any activity, which will divert the operator's attention while operating the hoist.
- The operator shall respond to signals from a designated person only. However the operator shall obey a stop signal at all times, no matter who gives it.
- The operator shall not lift or lower a load with the hoist until all persons are in the clear.
- The load shall be applied to the hoist slowly and evenly and avoid shock loading.
- A load shall not be lifted more than a few inches until it is well balanced in the sling or lifting device.
- When a load approaching the hoist capacity is to be lifted, hoist brake action shall be checked by lifting the load just clear of supports and continuing only after verifying that the brake system is operating properly.
- On rope hoists, the load shall not be lowered below the point where less than two full wraps of rope remain on each anchorage of the hoist drum.



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- The operator should avoid carrying loads over people.
  - Personnel shall not be carried on the hook or the load.
  - The operator shall not use the upper or lower limit devices as a normal means of stopping the load. These are emergency devices only.
- g. When parking the load, the operator shall not leave a suspended load unattended.

### **6.0 REFERENCES**

- 6.1 American Society of Mechanical Engineers (ASME) B30.9, Slings
- 6.2 American Society of Mechanical Engineers (ASME) B30.10, Hooks
- 6.3 American Society of Mechanical Engineers (ASME) B30.16, Overhead Hoists (Underhung)
- 6.4 PPL Safety Rule Book
- 6.5 Crosby Group, Inc.


### **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 29 CFR Subpart N - Materials Handling and Storage](#)
- 7.2 [OSHA 29 CFR Subpart N - Cranes, Derricks, Hoists, Elevators, and Conveyors](#)

### **8.0 TRAINING / SAFETY**

- 8.1 Follow protocol training for Crane Operators
  - 8.1.1 The Competent Person Rigger is responsible to conduct rigging in accordance with this procedure and applicable federal, state, county, and local regulations, including job site-specific requirements, as necessary. This person shall be knowledgeable and have experience, background and/or training in rigging hoisting and lifting methods.

### **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

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## 10.0 ATTACHMENT

- 10.1 [Form 5279 - Annual Documentation for Steel Chain Slings](#)
- 10.2 Attachment B - Annual Chain sling Inspection Entry Job Aid

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 REVISION HISTORY

Rev	03	Date	02/07/2018	Effective	02/14/2018
<b>Prepared by:</b>		Jared Dyer, CSP – Supervisor – Safety Operations			
<b>Reviewed by:</b>		Steve Mondschein – Health and Safety Professional			
<b>Approved by:</b>		Brian Matweecha, Manager - Safety Operations			
<b>Revision Comments:</b>		Included storage location of alloy steel chain annual inspection forms and added Attachment			

Rev	02	Date	05/01/2017	Effective	06/16/2017
<b>Prepared by:</b>		Colin J. Brigham, CSP, CIH – OneSource; Deborah Sweinhart, Safety Program Specialist			
<b>Reviewed by:</b>		Patrick Renshaw, Project Manager Environmental; Safety Professionals: Brian Kostik, Dalton Shorts, Jared Dyer, Elizabeth McKay, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Safety Operations Manager			
<b>Revision Comments:</b>		Reviewed by Certified Industrial Hygienist – changes made only to include electronic database details			

Rev	01	Date	04/01/2014	Effective	04/01/2014
<b>Prepared by:</b>		Deborah A. Sweinhart, Project Manager Health & Safety			
<b>Reviewed by:</b>		Jaredy Dyer, Safety Professional			
<b>Approved by:</b>		Brian Zickefoose, Safety Manager			
<b>Revision Comments:</b>		Revised standards listing, eliminated question in text, underlined definitions			

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<b>Rev</b>	00	<b>Date</b>	3/01/2012	<b>Effective</b>	03/10/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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# Attachment B Annual Chain Sling Inspection Entry Job Aid


From the CCATs home page, select 'Main Menu'. A new drop down menu will appear. From this menu, select 'Electric Utilities Meeting'.

The screenshot displays the CCATS (Computerized Chain Aid Training System) interface. The top navigation bar includes 'Home', 'Main Menu', 'My Preferences', and 'Help'. The 'Main Menu' dropdown is open, showing various options. The 'Electric Utilities Meeting' option is highlighted. Below the dropdown, the 'Electric Utilities Meeting Search' form is visible. The form includes fields for 'Region/Site/Department', 'Name', 'Start Date (mm/dd/yyyy)', 'Reference #', 'Status', and 'Assessment Type'. The 'Search' button is highlighted with a red box.

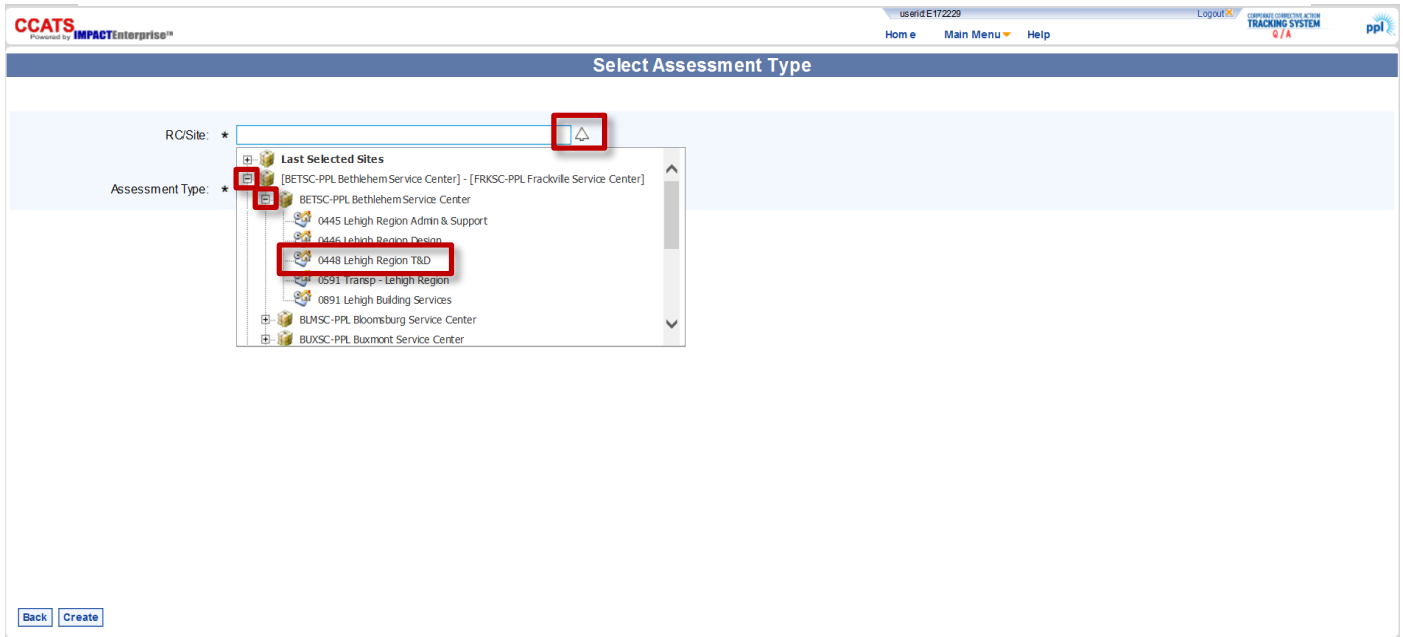
Need assistance? Please follow these steps to find help:

1. On the CCATS Home page, expand the "Job Aids & H
2. Click on the "Job Aids" link and expand the list.
3. Look for the Job Aid related to the task you want to
4. If you need additional assistance, contact your organ
5. To find your CAPCO, expand the "Job Aids & Helpful
6. Click on "CAPCO Look Up By RC".
7. Scroll through the list or use ctrl+f to find your RC. T
8. If you don't find a CAPCO, contact the ISD Help Desk

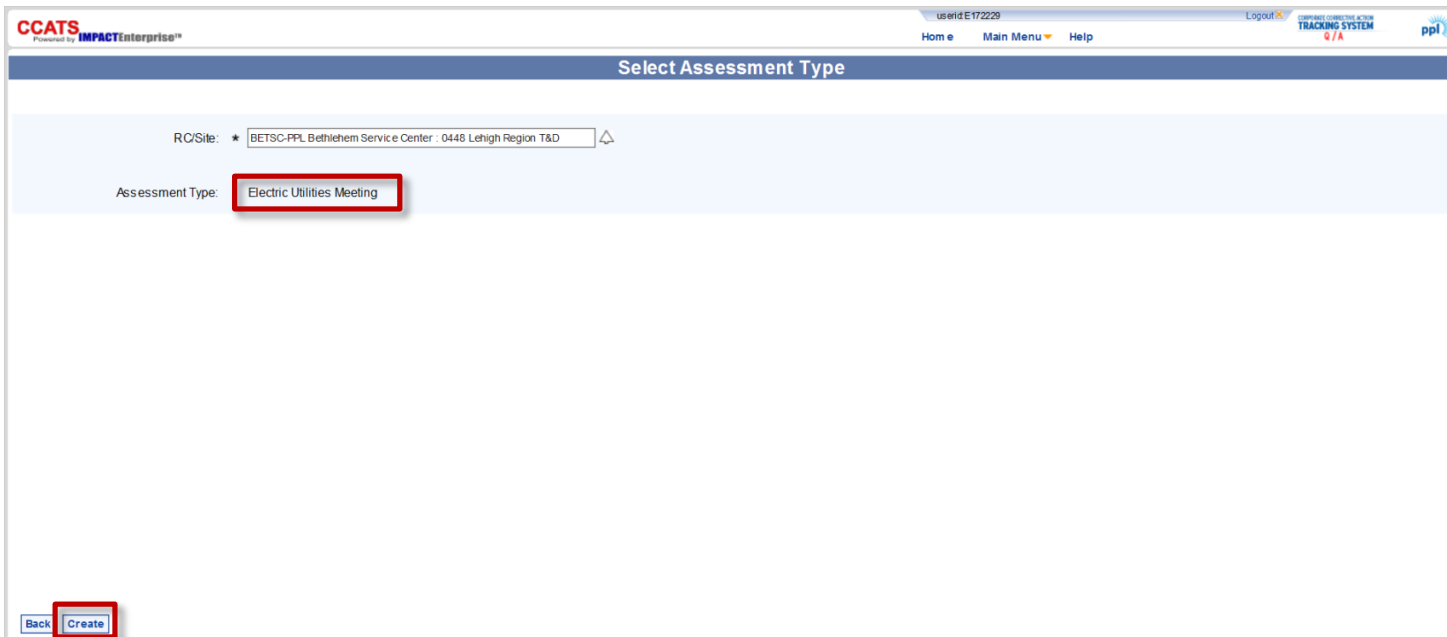


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To choose your RC/site, click on the arrow to expand the list.  
The service centers are in alphabetical order, so click on the '+'  
to continue expanding until you find your RC under the site.



When you select your RC/site, the Assessment Type will  
automatically populate to 'Electric Utilities Meeting'. Then click  
'Create'.





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Fill in the appropriate information (text below is an example).

RC/Site: NPTSC-PPL Newport Service Center : 0982 Tech Development & Improvement  
 Assessment Type: Electric Utilities Meeting  
 Status: Open  
 Short Description: 2018 Annual Chain Sling Inspection

In Short Description, describe what the meeting is.

Additional Information

Description: \* Annual Chain Sling Inspection for Newport T&D  
 Date Occurred (m/d/yyyy): \* 1/26/2018 10:56  
 Meeting Type: Annual Chain Sling Inspection

In Description, include the work group inspections are completed for.

Enter date the meeting took place.

Select 'Annual Chain Sling' for Meeting Type.

To enter the Organizer or Attendee, type in the employee's last name. CCATs will then search the address book and auto populate. When complete, select 'Save'.

### Responsibilities

Created By (Minimum - 1)  
 Created By: \* Cunningham, Kelly M Search  
 Your name will auto populate here.

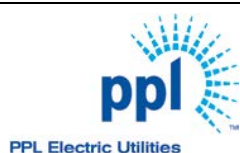
Organizer  
 Organizer: Search  
 Starting with the last name, type in the Organizer.

Attendee  
 Attendee: Search  
 Attendee: Search  
 Attendee: Search  
 Starting with the last name, type in the Attendees. Click the '+' to add more than one Attendee.

### Attachments Do not attach non-public Transmission Function Information or Critical Cyber Asset Information

Add File Add Link  
 Add completed 'Annual Documentation for steel chain slings' document.

Back Action Items Save  
 Select 'Save' when complete.



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### **1.0 PURPOSE/SCOPE**

- 1.1 The use of respiratory protective equipment is required to insure the safety and health of all PPL Electric Utilities employees engaged in operations where excessive airborne contaminants cannot be engineered out of the work environment and where applicable, the ALARA philosophy (As Low as Reasonably Achievable) has been satisfied. Contaminants can be encountered by the failure of control equipment or rough work processes where control equipment is not feasible. Contaminants vary in form from nuisance dust, to vapors, particulate matter, gases, mists, fumes, and fogs.

### **2.0 RESPONSIBILITY**

#### **2.1 Employee**

- 2.1.1 Use respiratory protection consistent with this procedure and training.
- 2.1.2 Report weight gains or losses (+/- ~20%) and medical conditions which might reduce your ability to use a respirator and changes in facial structure (e.g. dentures) which might reduce facial seal of the respirator.
- 2.1.3 Wear respirators properly, perform negative or positive fit check each time they don a respirator, change cartridges at least daily or whenever resistance to breathing is encountered or when odor breakthrough occurs and check the expiration date on the filter/canister to make sure the filtering medium has not reached its expiration date.

#### **2.2 Line Management**

- 2.2.1 Assure that employees required to wear respirators are appropriately trained, fit tested, and medically cleared.
- 2.2.2 Assure that employees wear respirators in conditions when respirators are needed.
- 2.2.3 Use respiratory protection consistent with this procedure and training.
- 2.2.4 Report known changes in employee health status, which may reduce an employee's ability to wear a respirator safely to Health Services.
- 2.2.5 Report respiratory program problems to the regional respirator program administrator, or to Safety Operations.
- 2.2.6 Review (or assign a designee to review) and sign Appendix D form with employees who are not on the respirator program but choose to wear a filtering facepiece (dust mask) respirator.
- 2.2.7 Identify/appoint the plant or regional respirator administrator.



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- 2.2.8 Line management supervisors of employees who wear respirators should receive annual respiratory protection training.
- 2.2.9 Supervisors of employees who are assigned their own respirators must assure that the respirators are periodically inspected. Documentation of this inspection is to be forwarded to the local respirator program administrator. (See Section 15 Respirator Inspection.)

**2.3 Employee's Supervisor**

- 2.3.1 Facilitate implementation of the respiratory protection program within the area of responsibility.
- 2.3.2 Advise Safety Operations and Health Services representative of problems or deficiencies and to recommend corrective actions.

**2.4 Safety Operations**

- 2.4.1 Work with Health Services to ensure a copy of PPL respiratory protection program, OSHA 1910.134, and other pertinent information are made available to medical personnel, as needed.
- 2.4.2 Facilitate implementation of the respiratory protection program.
- 2.4.3 Review and approve respiratory protection training courses.
- 2.4.4 Revise this procedure as necessary.

**2.5 Health Services**

- 2.5.1 Conduct medical evaluations on employees according to 29CFR 1910.134 and this Respirator Protection Procedure.
- 2.5.2 Review and advise on medical determinations regarding claustrophobics.
- 2.5.3 Provide written recommendation regarding employee's ability to wear a respirator.

**3.0 APPLICABILITY**

- 3.1 This procedure provides guidelines for respiratory protection to protect employees engaged in operations where excessive airborne contaminants cannot be engineered out of the work environment.



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## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- 4.2 **Atmosphere-supplying respirator** means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- 4.3 **Canister or cartridge** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- 4.4 **Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- 4.5 **Emergency situation** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- 4.6 **Employee exposure** means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- 4.7 **Filtering facepiece (dust mask)** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- 4.8 **Fit factor** means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- 4.9 **Fit test** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- 4.10 **Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.
- 4.11 **High efficiency particulate air (HEPA) filter** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.



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- 4.12 **Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- 4.13 **Immediately dangerous to life or health (IDLH)** means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- 4.14 **Interior structural firefighting** means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures, which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)
- 4.15 **Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- 4.16 **Oxygen deficient atmosphere** means an atmosphere with oxygen content below 19.5% by volume.
- 4.17 **Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
- 4.18 **Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- 4.19 **Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- 4.20 **Pressure demand respirator** means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- 4.21 **Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- 4.22 **Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- 4.23 **Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.





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- 4.24 **Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- 4.25 **Service life** means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.
- 4.26 **Supplied-air respirator (SAR) or air-line** respirator means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- 4.27 **Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.
- 4.28 **User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

### 5.0 MAIN BODY

- 5.1. While this section provides the written procedures for respirator use at PPL Electric Utilities, specific tasks may require additional respiratory use guidance. In such a case, additional procedures must be written, maintained, and made available to all affected personnel who use, supervise, or regulate respiratory protection.
- 5.2 Procedures shall be established as needed to define specific local program guidance such as (but not limited to) the distribution, maintenance, and personnel responsible for implementing the respirator program within the affected workgroups.
- 5.3 Selection of Proper Respirators
  - 5.3.1 Only PPL Electric Utilities Tool and Equipment Committee approved respirators and respiratory equipment shall be used to protect employees in areas where respirators are required to be used. NIOSH/MSHA approved respirators shall be used. A respirator is NIOSH/MSHA approved as the whole unit with specific components.
    - a. The use of non-approved components or the mixing of components between different types of makes of respirators nullifies the approval.
    - b. Use of non-approved components such as incorrect hoses or regulators on self-contained breathing apparatus or air-line respirators may result in serious harm to the user due to possible malfunction of the system.
    - c. The use of an approved respirator in atmospheric concentrations for which it is not approved is not allowed.





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- d. Breathing air cylinders shall meet specifications of 49 CFR 178.
- 5.4 Properly selected and approved respirators shall be worn whenever the work environment presents potentially hazardous airborne conditions. These conditions include (but are not limited to) the following:
- 5.4.1 Oxygen level below 19.5% (or below a partial pressure of 95-mmHg for O<sub>2</sub>).
  - 5.4.2 Atmospheres contaminated with toxic gases, vapors, and/or particulates.
  - 5.4.3 Confined spaces, per Confined Space Procedure.
    - a. Jobs/areas identified for respirator use by EHS, or by the Supervisor.
    - b. Service in fire brigades, rescue operations, etc., requiring the use of SCBA equipment.
    - c. Whenever airborne contamination occurs at levels, which exceed: Occupational Safety and Health limits, American Conference of Governmental Industrial Hygienists Threshold Limit Values.
    - d. Radiological applications consistent with NRC regulations and guidelines.
    - e. Attachment B to this document provides general guidelines for respirator selection for a variety of conditions, which may be encountered at PPL Electric Utilities.
    - f. Attachment C to this document provides a respirator selection guide for non-radiological respirator use.
- 5.5 IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) ATMOSPHERES
- 5.5.1 Specific procedures for confined space entries are provided within the Confined Enclosed/Space Procedure.
  - 5.5.2 For all IDLH atmospheres, the following requirements must be met:
    - a. One employee or, when needed, more than one employee is located outside the IDLH atmosphere;
    - b. Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;
    - c. The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;



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- d. The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
- e. The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

5.5.3 Employee(s) located outside the IDLH atmospheres are equipped with:

- a. Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA;
- b. Either appropriate retrieval equipment for removing the employee(s) whom enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or equivalent means for rescue in accordance with OSHA requirements.

5.6 Respirator user's :

- 5.6.1 Report medical conditions, which might reduce the ability to use a respirator and changes in facial structure (e.g. dentures) which might reduce facial seal of the respirator.
- 5.6.2 Wear respirators properly; perform negative and positive fit check each time they don a respirator, to change cartridges at least daily or whenever resistance to breathing is encountered or when odor breakthrough occurs and check the cartridge/canister for expiration date.
- 5.6.3 Explanation of why more positive control is not immediately feasible. This shall include recognition that every reasonable effort is being made to reduce or eliminate the need for respiratory protection.
- 5.6.4 Have a discussion of the proper types of respirators for each particular purpose.
- 5.6.5 Have a discussion of each device's capabilities and limitations, including whether or not it can be used in an immediately dangerous to life or health atmosphere.
- 5.6.6 Discuss methods of daily user fit checks. The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. The positive and negative pressure check as listed below shall be used.
- 5.6.7 Complete a Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any



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evidence of outward leakage of air at the seal. For most respirators, this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

- 5.6.8 Complete a Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.
- 5.6.9 Know how to recognize and respond to emergency situations (i.e., loss of air supply).
  - a. In IDLH environment, if nauseous lift mask to vomit and return mask to face immediately, return to safe area IMMEDIATELY, then remove mask.
  - b. In non-IDLH environment, remove respirator and return to safe area IMMEDIATELY.
- 5.6.10 Have an opportunity to handle the device, have it fitted properly, test the facepiece-to-face seal of all negative pressure facepieces in a test atmosphere, and wear it for a familiarity period. (During fit testing protocol.)
- 5.6.11 Complete proper maintenance, cleaning, and care of respirators which are assigned to them for their exclusive use.
- 5.6.12 Inform his/her supervisor of any change in health status, which may impact, on his/her ability to use a respirator.
- 5.6.13 Have knowledge of work practices/responsibilities associated with respirator use.
- 5.6.14 Replace respirator cartridges at least at the end of each shift or when breathing resistance increases or if odor breakthrough occurs.
- 5.6.15 Users can, at their discretion leave the area due to respirator problems including equipment failure, communication failure, physical discomfort or other problems with their respirator.
- 5.6.16 Know how to recognize medical signs and symptoms that may limit or prevent the effective use of respirators, including difficulty in breathing, significant heart or lung illnesses.



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**5.7 FACIAL HAIR**

- 5.7.1 Tight fitting respirators require a tight seal. Employees must be clean shaven in the seal area prior to donning tight fitting respirators.
- 5.7.2 A person who has hair (mustache, beard) which interferes with an effective seal between the respirator and face or which interferes with the function of a respirator valve(s) shall not be permitted to wear the respirator or to be fit tested.

**5.8 FIT TESTING**

- 5.8.1 Each employee must be annually (to the month) fit tested for every type of tight-fitting respirator that he/she is to use. Annual means the fit testing may occur January 2007, January 2008, January 2009, etc. However, SSES is governed through a memorandum of understanding between OSHA and NRC. REG GUIDE 8.15 and NUREG 0041 permit a Grace Period. "Retesting must be done annually. If necessary, a retest "grace period" of up to 90 days is considered to be reasonable. Licensees should not interpret this grace period to mean that fit-testing can be accomplished every 15 months. Three consecutive fit-test periods should not exceed 39 months
- 5.8.2 Quantitative fit testing (TSI Portacount see HP-TP-765) is the standard, required procedure for assuring proper fit of respirators on employees.
- 5.8.3 Employees to be fit tested shall be fit tested by a person trained to conduct respirator fit testing.
- 5.8.4 An employee should be asked, prior to testing, if he/she has a medical or physical problem, which would be aggravated by wearing a respirator. If there is a problem, do not fit test that employee and notify Health Services.
- 5.8.5 A record of each fit test shall be made to document key information about the date and types of respirators with which employees were fit tested. Recorded results reside in Personnel Qualifications System (PQS) under Human Resources and Payroll System (HRPR).
- 5.8.6 Employee shall be medically cleared prior to initial respirator fit testing of respirators.
- 5.8.7 Attachment E lists acceptable fit factors.
- 5.8.8 The use of a Self-Contained Breathing Apparatus (SCBA) requires passing standard quantitative fit testing on the equivalent (size, type, manufacturer) full-face respirator body.



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- 5.8.9 Dust Masks – Voluntary use of dust masks (e.g. filtering facepieces such as 3M 8710 type or similar) do not require fit testing. Fit testing must be performed when use of dust masks is required.
- 5.8.10 Power Air Purifying Respirator (PAPR) - Users must pass the quantitative fit test of the negative pressure respirator body qualifications.
- 5.8.11 Air-line Supply - Users must pass the quantitative fit test of the negative-pressure respirator body qualifications.
- 5.8.12 Fit Testing Exception - Employees who voluntarily use filtering facepiece (dust mask) respirators consistent with this Safety Procedure do not need to be fit tested.

**5.9 CLAUSTROPHOBIA & RESPIRATOR USE**

- 5.9.1 Claustrophobia manifests itself in many ways and to varying degrees of intensity in people. Observed reactions have ranged from a mild feeling of uneasiness to a physically violent reaction.
- 5.9.2 For the respirator wearer, claustrophobia can be a real handicap. Unavoidably, respirators involve putting some type of mask in contact with, or in proximity to the face. Sometimes the claustrophobic fear can be suppressed by the individual. This may be a reason for concern and depends on the degree of claustrophobia, the condition of the individual, the circumstance in the workplace, and the amount of stressful activity. Claustrophobia does have a "breaking point" where a person's claustrophobia is no longer controllable. If this happens during an emergency situation or in an atmosphere that's extremely toxic or IDLH, the welfare of the employee and others may be at risk.
- 5.9.3 Respirator Fit Testing personnel are responsible for observing claustrophobic tendencies during the fit test procedure. As appropriate, the fit tester will discuss the issue with the person being fit tested. Significant concerns will be discussed with Health Services Staff who is responsible to advise disposition of individual cases and may seek an opinion from a PPL Medical Consultant (contact Health Services).

**5.10 ISSUANCE OF RESPIRATORS**

- 5.10.1 Respirators may not be used by employees unless a medical evaluation determines that the user is physically fit to wear a respirator in required areas; the user passes the fit test for the respirator manufacturer, type, and size to be issued; and the employee has satisfactorily completed appropriate training in the use the type of respirator to be used. A validation system should be established to assure that respirators are issued only when these three criteria are met.



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5.10.2 In respirator issuance circumstances where employees are at liberty to withdraw respirators and cartridges as needed, the following precautions must be observed:

- a. The Respirator Procedure and other local directions on the use of respiratory protection must be available at all times. Instructions on the appropriate selection of respirator cartridges for common airborne contaminants must be readily available.
- b. A sign, bearing the following text must be displayed: **“CAUTION, Do Not Use Respirators in Required Respirator Use Areas Unless You Are Qualified-fit tested, trained, medically cleared. – Consult Your Supervisor”**

5.11 VOLUNTARY USE

5.11.1 Disposable Dust Masks - Disposable single use dust masks, such as 3M8710 (or equivalent such as Moldex 2200), may be used in environments for protection from nuisance dusts when industrial hygiene monitoring data assures that excessive dust levels do not occur and when the company does not require the use of respirators. 3M9913 (or equivalent) masks may be used to reduce nuisance level organic vapors (ODORS) when industrial hygiene monitoring data assures that excessive organic vapors do not occur and when the company does not require the use of respirators. Employees are not required to be fit tested, medically cleared, or formally trained in respirators. However, OSHA requires that the limitations of respirators and the information of Attachment D of this general safety procedure be reviewed with employees prior to allowing employees to use respirators voluntarily. Appendix D needs to be completed at least once for each employee (not in the respirator program) for each task or job duty that an employee will voluntarily use these respirators.

**Note:** Attachment D does not need to be completed for employees who are within the respirator program and have received annual training.



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5.11.2 Dispensing Dust Masks – The following sign must be posted at locations where disposable masks are issued to employees:

**Use of Disposable Dust Masks  
Requires the Completion of  
Respirator Program Appendix D  
OSHA 1910.134 Appendix D**

5.12 MAINTENANCE AND CARE OF RESPIRATORS

- 5.12.1 Individual Use Respirators – Respirators that are issued for the exclusive use of an individual shall be cleaned and disinfected as often as necessary to maintain it in a sanitary condition.
- 5.12.2 Respirators not assigned to individuals, used by various employees, shall be cleaned and disinfected after each use.
- 5.12.3 Respirators used for fit testing shall be cleaned and disinfected after each use.
- 5.12.4 Respirator cleaning and disinfecting shall be done in accordance with [OSHA 1910.134 \(Respiratory Protection\)](#), Appendix J of this Safety Procedure, and PPL Inc. Respirator Cleaning and Repair Program.

5.13 RESPIRATOR INSPECTION

- 5.13.1 Routine Use  
Respirators used in routine situations shall be inspected before each use and during cleaning process and includes the following:
  - a. Check respirator function, tightness of connection, and condition of various parts including, but not limited to, the facepiece, head straps, valves, connecting tube, cartridges, canisters or filter.
  - b. Check straps and other elastic parts for pliability and signs of deterioration.

5.14 User-Cleaned Equipment INSPECTION

- 5.14.1 In those cases where the respirator user cleans his/her respirator, a respirator inspection program should be established. This should be accomplished by having a supervisor or other respirator-trained person inspect individual respirators on a quarterly basis. A record of these inspections should be made periodically and the results transmitted to the local respirator program administrator.





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**5.15 Emergency Use**

- 5.15.1 All respirators maintained for use in an emergency situation shall be inspected at least monthly, and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use. The routine for inspecting is the same as Routine Use, listed above.
- 5.15.2 Emergency escape-only respirators shall be inspected before being carried into the workplace for use.
- 5.15.3 Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- 5.15.4 Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

**5.16 Self Contained Breathing Apparatus (SCBA)**

- 5.16.1 SCBA's shall be inspected monthly.
- 5.16.2 Air cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level.
- 5.16.3 Determine that the regulator and warning devices function properly.

**5.17 RESPIRATOR REPAIR**

- 5.17.1 Respirators that fail an inspection or are otherwise found to be defective must be removed from service and discarded or repaired or adjusted in accordance with the following procedures noted below. All repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.
- 5.17.2 Field repairs (commonly done in conjunction with regular cleaning and maintenance) include the following:
  - a. Replacement of head straps
  - b. Replacement of gaskets
  - c. Replacement of inhalation and exhalation valve
  - d. Replacement of speaking diaphragm housing





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5.17.3 Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator. PPL Inc. employees assigned to perform field repairs to respirators must first receive documented training in accordance with the "Respirator Cleaning and Repair" training program (MST-441).

**5.18 Special Repairs**

5.18.1 Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

5.18.2 All lens replacement must be performed at a facility that has the proper test equipment to test the respirator and ensure there is no leakage after repair.

**5.19 STORAGE**

5.19.1 Respirators shall be stored in a manner as to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Respirators shall be stored in a convenient, clean, and sanitary location and in such a manner that the facepiece and exhalation valve is not subject to deformation.

**5.20 WORK AREA SURVEILLANCE**

5.20.1 Industrial Hygiene Monitoring – Proper assessment of the hazard is the first important step to protection. This will require a thorough knowledge of process, related equipment, raw materials, end-products, and by-products, which can possibly create an exposure hazard. Air samples must be taken with proper sampling instruments during all phases of the suspect operation to assess the atmosphere for the concentration of particulate and/or gaseous contaminants. The sampling device and the type and frequency of sampling (continuous or spot) will be dictated by the exposure and operating conditions. Breathing zone samples are recommended and sampling frequency should be sufficient to assess the average exposure under the variable operating and exposure conditions.

5.20.2 Environmental Health & Safety is responsible for directing the non-radiological aspects of the employee monitoring program. Monitoring will be conducted by Environmental Health & Safety personnel and by appropriately trained department personnel.

**5.21 MEDICAL EXAMINATIONS**

5.21.1 Wearing any type of respirator imposes some physiological stress on the wearer. Air-purifying respirators resist inhalation because the filter or cartridge restricts free air flow, and also resist exhalation because the



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expired air must force open a valve. The special exhalation valve on pressure-demand SCBA, designed to ensure that the air pressure inside the facepiece is always positive, requires the wearer to exhale against resistance. The bulk and weight (up to 35 lbs.) of some SCBA's are a burden. Wearers of air-line respirators and hose masks must drag around up to 300 ft. of air supply hose.

- 5.21.2 Any or all of these factors increase the workload. If the worker's cardiovascular or pulmonary function is significantly impaired, wearing a respirator could constitute an unacceptable risk.
- a. Medical evaluations shall be conducted every three years for all employees who are required to wear respirators.
  - b. The Company's Medical Consultant shall determine what health and physical conditions constitute the minimum acceptable medical requirements to permit the use of respirators.
  - c. Health Services personnel with assistance from Medical Consultants shall review the results of the medical evaluations, make referrals, and note on PQS medical clearance.
  - d. The Company's Medical Consultant shall determine appropriate medical monitoring programs, which shall be established to ensure the effectiveness of the respiratory protection program. Radiological bioassay monitoring shall be performed according to NRC requirements/guidelines and/or best scientific consensus. Expert medical consultation should be considered when regulatory or administrative overexposures are suspect.

**5.22 RESPIRATOR PROGRAM EVALUATION**

- 5.22.1 It is the responsibility of Environmental Health & Safety to conduct a regular inspection and evaluation to determine the continued effectiveness of the program. This process shall be accomplished by observing respirator use, soliciting user comments, and by conducting regular inspections.
- a. An annual comprehensive evaluation must be accomplished and a report prepared for and submitted to the local departmental manager. A copy of this report is to be sent to Environmental Health & Safety Manager

**5.23 SPECIAL CONSIDERATIONS**

- 5.23.1 Corrective Lenses – When the respirator user must wear corrective lenses and wear a full-face respirator, the lenses shall be compatible with the assigned facepiece. Good vision and a gas-tight seal must be maintained. The user department will pay for the corrective spectacles,



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which fit inside the full-face respirator. The employee is responsible for paying for the eye examination to determine lens correction and frame sizing.

5.23.2 Contact lenses may be worn with full-face respirators, provided the individual has previously demonstrated that he or she has had successful experience wearing contact lenses. The contact lens wearer shall practice wearing the respirator while wearing the contact lenses. (ANSI Z88.2-1992 7.5.3.3) Tool and Equipment Manual Section 9 provides direction for the purchase of MSA corrective spectacles.

5.23.3 Non-Employees – In situations where non-employees will do jobs and/or work in areas recognized as respirator use areas by the Company, the user department shall advise the contractor of the nature of the hazard and the type of respiratory protection which is used at PPL for similar tasks. The user departments are encouraged to include health hazard and respirator use information in all contract bidding information, for the use of the contractors.

**5.24 COMPRESSED BREATHING AIR**

5.24.1 The source of Grade 'D' Breathing Air supplied to a worker shall be derived from PPL In-house Air Compressors and may be any of the following, providing the procedures indicated for each are met:

5.24.2 Compressor Breathing Air Systems in Conjunction with “DELMONOX”-type Portable Filtration Units

- a. Compressors shall be constructed and the air intakes situated so as to avoid entry of contaminated air into the system.
- b. All compressors, which may supply breathing air, must have high temperature and failure alarms.
- c. Provisions must be established to assure that affected employees hear alarms or are notified when alarms are activated.
- d. Air may NOT be used directly without a “DELMONOX”-type portable air filtration (CO detection) unit unless the compressor is designed to deliver breathing quality air and the quality of that air has been tested and proved to be at least Grade D within the previous 45 days.

**5.25 “DELMONOX”-Type Portable Filtration Units**

5.26.1 A continuous monitoring carbon monoxide detector with an alarm set no higher than 10 ppm shall be installed in the unit. The CO monitor shall be within calibration date (calibrated within the previous 45 days).



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- 5.25.2 Air from the “DELMONOX” unit must be tested within the previous 45 days to assure that the unit provides Grade D air.
- 5.25.3 Suitable in-line purifiers and filters shall be installed and maintained/replaced periodically according to manufacturer’s guidelines.
- 5.25.4 Affected employees receiving air from the “DELMONOX” shall be notified immediately when breathing air system alarms are activated and must take appropriate actions.
- 5.26 Filling Compressed Air Cylinders from In-house Compressors
  - 5.26.1 Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system.
  - 5.26.2 Suitable air purifiers and filters shall be installed in the system and shall be maintained/replaced periodically according to the manufacturer’s guidelines.
  - 5.26.3 A high temperature alarm shall be installed on the compressor.
  - 5.26.4 A continuous monitoring carbon monoxide detector with an alarm set no higher than 10 ppm and shall be installed in the system. The CO monitor shall be calibrated every 30 to 45 days.
  - 5.26.5 A Continuous moisture meter to assure that the dew point of the grade D air meets the requirements of OSHA and NUREG/NRC through GCA. The dew point of air in bottles of compressed air (not plant airline samples) is not to exceed the lower of -50°F or 10° lower than the coldest temperature expected in the location the bottles will be used.
  - 5.26.6 Except during emergencies, all breathing air cylinders, permanent or mobile, shall be filled using air derived from in-house compressors and subject to PPL Grade D Quality Control procedures. Partly used “systemwide” cylinders of PPL compressed air may be topped off with compressed air that has cleared the QC requirements provided below. (“Captive” breathing air cylinders referenced in the next section may be topped off with air from that location’s compressor.
  - 5.26.7 During a fire or other emergency, it may be necessary and appropriate to refill PPL cylinders from fire department compressors, cascade systems or other sources, consistent with good judgment. At the completion of such an event, PPL cylinders filled from outside sources should be appropriately inspected, emptied, and refilled with PPL Grade D air. Hazleton Tool and Material Support, maintains supplies of compressed air that may be an effective resource during or immediately after an emergency.



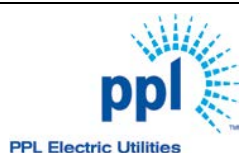
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- 5.26.8 Breathing air cylinders used systemwide shall be identified with a numbering system to permit QC tracking and control.
- 5.26.9 All breathing air cylinders shall be prominently labeled "breathing air" consistent with ANSI/CGA C-4 1990.
- 5.26.10 Quality control for compressed air distributed systemwide shall be maintained on a batch basis through the following approach:
- 5.26.11 Before filling cylinders, obtain a sample of air per Attachment M.
- 5.26.12 Fill cylinders and capture identity of all cylinders filled. Set freshly filled cylinders aside in quarantine area appropriately identified as not available for use.
- 5.26.13 Obtain a post-filling air sample per Attachment M method.
- 5.26.14 Upon laboratory analysis and successfully meeting Grade D testing requirements, the batch of cylinders may be released from quarantine.
- 5.27 Compressed Air Testing
  - 5.27.1 Breathing air shall be derived from compressed atmospheric air in accordance with Attachment I.
  - 5.27.2 Low Pressure and High Pressure sampling procedures as written in Attachment j AND k shall be followed for the purpose of obtaining an air sample to determine the suitability of a compressed air source for use as respirable air.
  - 5.27.3 Breathing Air Quality and Use
    - a. Compressed breathing air shall meet the requirements for Type 1-Grade D breathing air as described in ANSI/CGA *Commodity Specification for Air*, G-7.1-1989. Attachment I
- 5.28 RECORDKEEPING
  - 5.28.1 Medical Records, fit test records, and training records shall be maintained according to OSHA 1910.1020(i) for 30 years.

## **6.0 REFERENCES**

- 6.1 PPL EU Safety Rule Book
- 6.2 The Respiratory Protection Program guidelines are based on the following:  
OSHA Respirator Requirements 29 CFR 1910.134 (1998), American National Standards Institute Z88.2-1969 and 1992, A Guide to Industrial Respiratory



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Protection, DHHS (NIOSH) Publication No. 87-116, Manual of Respiratory Protection Against Airborne Radioactive Materials (NUREG - 0041, September 1976) and Compressed Gas Association Standard G-7.1-1989.

- 6.3 This Respiratory Protection Procedure is written to establish and provide to user departments core guidelines for the proper use of respirators at PPL. When these guidelines do not sufficiently detail a course of action for the use of respirators under special conditions, Environmental Health & Safety will have the responsibility of researching the above documents and will recommend a suitable course of action.

### **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 1910.134 \(Respiratory Protection\)](#)

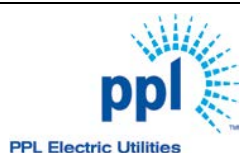
### **8.0 TRAINING / SAFETY**

- 8.1 For those people who use respirators, [MST 440 \(Respiratory Protection CBT\)](#) must be taken each year and shall be to the month (e.g. training to be conducted January 2017, January 2018, and January 2019). It shall include:
- a. Instruction in the nature of the hazard, whether acute, chronic, or both, and an honest appraisal of what may happen if the proper device is not used.

### **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

### **10.0 ATTACHMENTS**

- 10.1 Attachment A Assessment of Respirator Jobs
- 10.2 Attachment B Selection of Proper Respirators
- 10.3 Attachment C Respirator Selection Guide
- 10.4 Attachment D Employee Voluntary Use of Filtering Facepiece (Dust Mask) Respirators
- 10.5 Attachment E Acceptable Fit Factors
- 10.6 Attachment F Respirator Protection Factors
- 10.7 Attachment G Medical Evaluations
- 10.8 Attachment H Respirator Cleaning and Disinfection
- 10.9 Attachment I COMPRESSED AIR - BREATHING QUALITY
- 10.10 Attachment J Low Pressure Air Sampling INSTRUCTIONS
- 10.11 Attachment K AIR SAMPLING INSTRUCTION FOR COMPRESSOR FILL STATIONS



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## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## **12.0 RECORD OF REVISIONS**

Rev	01	Date	7/10/2017	Effective	7/10/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Revised section 5.9.9 regarding the fit testing requirement with filtering face pieces (dust masks)			

Rev	00	Date	08/10/2012	Effective	08/10/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





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**ATTACHMENT A - MANAGEMENT ASSESSMENT OF RESPIRATOR JOBS**

<b>Job/Task:</b>	
<b>Department:</b>	
<b>Completed by:</b>	
<b>Date:</b>	

OSHA 1910.134 (e)(5) requires that employers provide the physician a description of the jobs where employees wear respirators. This form is to be completed for all respirator use groups and is to be forwarded to the PPL Electric Utilities Manager – Environmental, Health, and Safety.

	Type Respirator:	Other PPE:	Expected Work Effort:	Work Climate:	Duration/ Frequency:
Airborne Contaminant:	<input type="checkbox"/> Half-mask <input type="checkbox"/> Full-face <input type="checkbox"/> Air line supply <input type="checkbox"/> SCBA <input type="checkbox"/> Other:	<input type="checkbox"/> Tyvek coveralls <input type="checkbox"/> Cloth coveralls <input type="checkbox"/> FR clothing <input type="checkbox"/> Boiler Jackets <input type="checkbox"/> Face shield <input type="checkbox"/> Fall Protection <input type="checkbox"/> Rainsuit <input type="checkbox"/> Other:	<input type="checkbox"/> Light < 25 lbs. <input type="checkbox"/> Medium 25-50 lbs. <input type="checkbox"/> Heavy > 50 lbs. <input type="checkbox"/> Emergency Response <input type="checkbox"/> Other:	<input type="checkbox"/> Indoor <input type="checkbox"/> Summer, outdoor <input type="checkbox"/> Winter, outdoor <input type="checkbox"/> Other:	On a day respirators are used, they are typically used for: <input type="checkbox"/> 1-2 hours <input type="checkbox"/> 2-4 hours <input type="checkbox"/> > 4 hours <hr/> This use of respirators typically occurs: <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> ___ Days/ month <input type="checkbox"/> Emergency





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**ATTACHMENT B - SELECTION OF PROPER RESPIRATORS**

**SELECTION OF PROPER RESPIRATORS**

(See Appendix F for Respirator Protection Factors)

The selection of the proper respirator is based on identifying the respiratory hazard from which protection is needed. Respiratory hazards may be broken down into two main categories: Oxygen Deficient Atmospheres and Contaminated Atmospheres.

A. Oxygen Deficient Atmospheres

The oxygen content in air is 20.9% by volume at sea level. The minimum legal requirement for oxygen is 19.5% by volume. Oxygen deficiency can occur in confined spaces by displacement of air by other gases such as argon or nitrogen, or by means of oxidation processes such as fire, rusting, aerobic bacteria, etc., where oxygen is consumed.

B. Contaminated Atmospheres

Airborne contaminants that can adversely affect the respiratory system fall into three general categories:

- (1) Particulate Matter - which, when deposited in the lungs, may produce either tissue damage, tissue reaction, or physical plugging of passages. An example of this type of contaminant is asbestos, which upon entering the lung causes fibrotic growth in the lung tissue, plugging the ducts or limiting the effective area of the linings of the lung.
- (2) Toxic Vapors and Gases - that produce adverse reaction in the tissue of the lungs. Examples of this type of toxic gas are ammonia and chlorine. These chemicals are a primary irritant of mucous membranes and are capable of causing chemical burns. Inhalation of these gases causes pulmonary edema and direct interference with the gas transfer function of the lungs.
- (3) Toxic Aerosols and Gases - that do not affect the lung tissue but are passed from the lung directly into the blood stream, where they are carried to other body organs, or have adverse effects on the oxygen carrying capacity of the blood. An example of this type of contaminant is carbon monoxide, which passes into the bloodstream without harming the lungs. In the bloodstream, carbon monoxide competes for the hemoglobin so that it cannot accept oxygen thus causing oxygen starvation.

C. Respiratory Protective Equipment

Respiratory protective devices fall into three general categories, negative pressure or air purifying, supplied air- and self-contained breathing apparatus. Following are several types of respirators in each of these categories:



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**Negative Pressure or Air Purifying:**

- Mechanical Filter
- Chemical Cartridge
- Combination Air Line and Filter
- Gas Mask

**Positive Pressure Supplied Air**

- Air-line Respirator
- Hoods
- Combination Supplied Air/Filter

**Self-Contained Breathing Apparatus**

- Scott Pressur-Pak
- MSA 4500

(1) **Mechanical Filter Respirators**

Mechanical filter respirators offer respiratory protection against airborne particulate matter including dust, mist, fume and smoke. They consist of a soft resilient facepiece to which is directly attached a mechanical filter of some fibrous material which removes the harmful particles by physical trapping as air is inhaled through the material. Gaseous matter will pass through the filter, but solid or liquid particles are trapped. Mechanical filter respirators do not provide protection against gases, vapors, or oxygen deficiency.

(2) **Chemical Cartridge Respirators**

Chemical cartridge respirators are for protection against light concentrations (.001% to .1% by volume, depending upon the contaminant) of certain gases, alkaline gases, organic vapors, and mercury vapors by utilizing various chemical filters to purify the inhaled air. These respirators use cartridges containing chemicals to remove harmful gases and vapors. There are several different types of these cartridges available from the manufacturer.

Chemical cartridge respirators are non-emergency respiratory protective devices and should never be used in immediately dangerous atmospheres. There are five major limitations that apply to chemical respirators.

- (1) Do not use chemical cartridge respirators for protection against gaseous material which is extremely toxic in very small concentrations. An example would be hydrogen cyanide or phosgene.
- (2) Do not use chemical cartridge respirators for exposure to harmful gases which cannot clearly be detected by odor. Examples include: methyl chloride and hydrogen sulfide. Methyl chloride is odorless, hydrogen sulfide, although foul smelling, paralyzes the olfactory nerves so quickly that detection by odor is unreliable.



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- (3) Do not use chemical cartridge respirators for protection against gases that are not effectively stopped by the respirator elements regardless of concentration. Example of this is carbon monoxide.
- (4) Do not use chemical cartridge respirators in oxygen deficient atmospheres.
- (5) No credit is to be taken for use of chemical cartridge (sorbents) respirators against radioactive vapors or gases without specific permission from the Nuclear Regulatory Commission.

There are several gaseous materials for which chemical cartridge respirators should not be used for protection regardless of the concentration or time of exposure. The partial list of these contaminants identified below is offered for guidance on this matter. Safety and Health shall be contacted to recommend appropriate respiratory protection when specific respirators approved for the particular contaminant at hand are not available.

Acrolein	Methyl Bromide
Acrylonitrile	Methyl Chloride
Analine	Methylene Chloride
Arsine	Nickel Carbonyl
Bromine	Nitrobenzene
Carbon Disulfide	Nitro Compounds
Carbon Monoxide	Nitrogen Oxides
Dimethylaniline	Nitroglycerine
Dimethylsulfate	Nitromethane
Hydrogen Cyanide	Ozone
Hydrogen Fluoride	Phosgene
Hydrogen Selenide	Phosphine
Hydrogen Sulfide	Phosphorous Trichloride
	Sulfur Chloride



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(3) Combination Mechanical-Chemical Cartridge Respirators

Combination mechanical filter-chemical cartridge respirators utilize filters to trap dust, mist, or fumes, and a chemical cartridge to remove gases or vapors for dual or multiple exposure. The limitations of both mechanical filter and chemical cartridge respirators apply.

(4) Gas Masks

Gas masks have been used effectively for many years for respiratory protection against certain gases, vapors and particulate matter which otherwise might be harmful to life or health. However, because gas masks are air purifying devices, designed to remove specific contaminants from the air, it is essential that their use be restricted to atmospheres which contain sufficient oxygen to support life (at least 19.5 percent by volume at sea level) and which contain generally no more than 2 percent concentrations of toxic gases and vapors by volume. At no time shall a gas mask be used as an emergency escape device since in an emergency the concentration of the contaminants is unknown and the possibility of oxygen deficiency exists.

From a practical standpoint, gas masks are generally suitable for ventilated areas not subject to rapid change, but shall never be used in confined spaces below or above ground where oxygen deficiency and high gas concentrations may occur.

(5) Positive Pressure Air-Line Respirators

Positive pressure air-line respirators without escape provisions are approved for use in atmospheres not immediately dangerous to life or health. This limitation is necessary because the individual is entirely dependent upon an air supply that is not carried by the wearer of the respirator. Another limitation of the air-line respirators is that the air supply hose limits the wearer to a fixed distance from the air supply source.

The air-line respirator is connected to a suitable compressed air source by a hose and air is delivered to the user continuously in sufficient volume of at least 5 cubic feet per minute to meet the wearer's breathing requirements.

Accessory equipment such as pressure regulators, pressure relief valves, and air filters are required to insure that the air is at the proper pressure and quality for breathing. Air-line connectors on supplied air respirators must be unique so that they can be only connected directly to an air source which is acceptable for breathing air.

The air supply is very important and the air-line respirator is approved for use only when it supplies respirable air at the correct pressure and flow. The compressed air must meet the requirements of the Compressed Gas Association Specifications. Appendix K lists these requirements.



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Properly equipping an air-line respirator with an egress cylinder of compressed air to provide an emergency air supply qualifies the unit for use in atmospheres immediately dangerous to life and health. It only provides for a rated duration of three to five minutes of self-contained breathing air allowing the wearer to escape through the nearest convenient exit when the main air supply is restricted or depleted.

(6) Self-Contained Breathing Apparatus, Pressure Demand

Self-contained breathing apparatuses with pressure demand regulators are approved for use in oxygen-deficient atmospheres and other toxic atmospheres immediately dangerous to life and health. These units provide a high flow rate of air to meet breathing demands even during extreme exertion. Generally, they supply air for up to 30 minutes depending on the activity and the individual. (60 minute equipment is available.) They are equipped with an audible low level alarm signal to indicate when breathing supply is low and when this alarm sounds, the user is to immediately leave the area. Possible emergencies would be fire, large chlorine or ammonia leaks or spills, emergency entry into a confined space. The air used in these respirators must meet the strict purity requirements of the Compressed Gas Association Specification. (Appendix K).

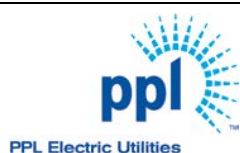
(7) Powered Air Purifying Respirator (PAPR)

PAPRs are approved for respiratory protection against airborne particulates including dusts, mists, fumes, smoke and fibers. They may not be used for protection against gases and vapors because chemical cartridges are not available for these types of respirators. Since the units DO NOT supply oxygen, they MAY NOT be used in atmospheres containing less than 19.5% oxygen.

Powered air purifying respirators actively move air through a filter to purify it and then direct that air into a hood, helmet or facepiece. They differ from conventional air purifying respirators in that air is continuously purified - not just on demand, and it is blown into the facepiece or hood to provide a positive pressure air flow. This means that even if the fit of the respirator is poor, contaminated air will not enter because clean air is being forced outward through any leaks.

PAPR filters should be replaced after each four hour period of use so that it will not become clogged and reduce air flow.

Follow manufacturer's guidelines for appropriate use of PAPR batteries. Investigate manufacturers' recommendations on maximum battery charging times and frequency of recharging from fully dead.

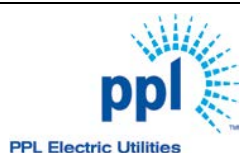


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**ATTACHMENT C - RESPIRATOR SELECTION**

<b>Respirator Selection</b>	<b>AIR PURIFYING HALF FACEPIECE</b>	<b>AIR PURIFYING FULL FACEPIECE</b>	<b>AIRLINE FULL FACEPIECE "DELMONO X" or Ambient Air Breathing Apparatus (No Egress Bottle)</b>	<b>SELF-CONTAINED BREATHING APPARATUS "SCBA"<sup>7</sup> or Supplied Respirator w/Egress Bottle<sup>7</sup></b>
<b>Respiratory Hazard</b>	<b>3M Brand 6000 Approved for up to 10X limit</b>	<b>MSA Ultratwin (MSA Ultravue)<sup>9</sup></b>		
ODA -- Oxygen Deficient Atmosphere, less than 19.5%	Not Approved	Not Approved	Not Approved	Approved
IDLH -- An atmosphere immediately dangerous to life or health				Note: Wearer may be required to use special harness and safety lines.
Asbestos  See General Safety Procedures, Volume II, Asbestos	Approved for non-regulated jobs, less than 0.05 f/cc only Cartridge: 2040 or 2091	Approved for regulated jobs if monitored and 6 mo. fit test. See Asbestos GSP for other uses and limitations. Cartridge: Type H or P100	Approved -- also -- Powered Air Purifying Resp.- (PAPR) full face	Approved <sup>1</sup>
Ammonia	Approved Cartridge: 6004 or 60926	Approved Cartridge: GMD or GME-P100	Approved A good choice when rapid cartridge break-through is a problem.	Approved <sup>1</sup>
Bird Droppings, especially cleanup of dry, dusty materials.	Approved Cartridge: 2040 or 2091	Approved Cartridge: Type H or P100		
Boiler drum and other equivalent residues. (Copper, nickel)	Approved Cartridge: 2046A, 60926	Approved Cartridge: Type H or P100	Approved <sup>1</sup>	Approved <sup>4</sup>
Boiler Flue Gases (SO <sub>2</sub> )  Note: Airborne exposure may not exceed limit for NO <sub>2</sub> , 3ppm.	Approved Cartridge: 6003 or 60926	Approved, Cartridge: GMC or GME-P100	Approved, conditionally. . . when user can readily escape from area without the use of a respirator.	Approved
Chlorine Gas	Not approved unless concentration is less than 10X limit. Cartridge: 6003 or 60926	Not approved unless concentration is less than 10X limit. Cartridge: GME-P100	Not Approved	Approved
Coal Dust	Approved	Approved	Approved <sup>4</sup>	Approved <sup>1</sup>



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<b>Respirator Selection</b>	<b>AIR PURIFYING HALF FACEPIECE</b>	<b>AIR PURIFYING FULL FACEPIECE</b>	<b>AIRLINE FULL FACEPIECE "DELMONO X" or Ambient Air Breathing Apparatus (No Egress Bottle)</b>	<b>SELF-CONTAINED BREATHING APPARATUS "SCBA"<sup>7</sup> or Supplied Respirator w/Egress Bottle<sup>7</sup></b>
<b>Respiratory Hazard</b>	<b>3M Brand 6000 Approved for up to 10X limit</b>	<b>MSA Ultratwin (MSA Ultravue)<sup>9</sup></b>		
	Cartridge: 2040 or 2091	Cartridge: Type H or P100		
Cooling System <sup>5</sup> Water At -- Cooling Towers -- Condensers	Approved Cartridge: 2040 or 2091	Approved Cartridge: Type H or P100	Approved <sup>4</sup>	Approved <sup>1</sup>
Fires, Rescue	Not Approved	Not Approved	Not Approved	Approved <sup>7</sup>
Fly Ash (Coal)	Approved Cartridge: 2040 or 2091	Approved Cartridge: Type H or P100	Approved	Approved <sup>1</sup>
Fly Ash/Baghouse	Approved if airborne SO <sub>2</sub> and NO <sub>2</sub> within limits. Contact Safety & IH Specialist. Cartridge: 60926	Approved Cartridge: GME-P100		
Grinding Dusts	Approved Cartridge: 2040 or 2091	Approved Cartridge: Type H or P100	Approved (A good choice when rapid filter loading of air purifying respirators is a problem.)	Approved <sup>1</sup>
Hydrochloric Acid, HCL, Muriatic Acid	Approved Cartridge: 6003 or 60926	Approved, Cartridge: GMC or GME-P100	Approved	Approved
Lead	Approved Cartridge: 2040 or 2091	Approved Cartridge: Type H or P100	Approved	Approved <sup>1</sup>
Mercury	Not Approved <i>unless</i> job is monitored. Discuss with Safety & IH Specialist Cartridge: 6009	Not Approved <i>unless</i> job is monitored. Discuss with Safety & IH Specialist Cartridge: 466204 or 815185	Approved if mercury level less than IDLH	Approved
Organic Vapors Cleaning solvents, paint thinners, mineral spirits. (Call Safety Operations for specific applications.)	Approved Cartridge: 6001 or 60926	Approved Cartridge: GMA, GMC or GMEP100	Approved <sup>4</sup>	Approved <sup>1</sup>
Painting, spray painting with organic base paint.	Approved, Cartridge: 60926	Approved Cartridge: GME-P100	Approved (A good choice	Approved <sup>1</sup>





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<b>Respirator Selection</b>	<b>AIR PURIFYING HALF FACEPIECE</b>	<b>AIR PURIFYING FULL FACEPIECE</b>	<b>AIRLINE FULL FACEPIECE "DELMONO X" or Ambient Air Breathing Apparatus (No Egress Bottle)</b>	<b>SELF-CONTAINED BREATHING APPARATUS "SCBA"<sup>7</sup> or Supplied Respirator w/Egress Bottle<sup>7</sup></b>
<b>Respiratory Hazard</b>	<b>3M Brand 6000 Approved for up to 10X limit</b>	<b>MSA Ultratwin (MSA Ultravue)<sup>9</sup></b>		
			when rapid cartridge break-through or prefilter loading is a problem.)	
Rodent Cleanups (hantavirus) NOTE: Filtering facepiece/dust mask may be acceptable for minor cleanups. Complete Appendix D if employee not on respirator program.	Approved Cartridge: 2040 or 2091	Approved MSA Type H or P100 Cartridge	Approved	Approved
Silica Sand "Sandblasting"	Not Approved	Approved for support personnel in the sandblasting area. Not approved for sandblast operator. MSA Type H or P100 Cartridge	Approved for sandblast operator. Use proper sandblast hood.	Approved <sup>1</sup>
Other Silica Activities, IH monitoring may be appropriate; discuss with Safety and Industrial Hygiene Specialist.	Approved Cartridge: 2040 or 2091	Approved MSA Type H or P100 Cartridge	Approved <sup>4</sup>	Approved <sup>1</sup>
Sulfur hexafluoride (SF <sub>6</sub> ) <ul style="list-style-type: none"> <li>Contact Safety Operations to conduct monitoring</li> <li>See DDI 294</li> </ul>	Approved for dust only – not odor Cartridge: 60926	Approved for dust only--not odor Cartridge: GME-P100	Approved for dust and pungent odor	Approved for dust and pungent odor
1, 1, 1-Trichloroethane	Approved Cartridge: 6001	Approved Cartridge: GMA, GMC or GME-P100	Approved	Approved <sup>1</sup>
Vanadium	Approved Cartridge: 2040 or 2091	Approved MSA Type H or P100 Cartridge	Approved	Approved
Welding fumes in open areas <sup>8</sup> , including galvanized. Note: Coatings may contain lead or cadmium. Bulk paint analysis needed. Contact S&IH Specialist for specific	Approved <sup>10</sup> Cartridge: 2046A, 2040, 2091, or 60926 <sup>3</sup>	Approved <sup>10</sup> Cartridge: Type H or GME-P100 (Also Available: MSA Comfo II Belt or Back-Mounted Respirator)	Approved <sup>4</sup>	Approved <sup>1</sup>





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<b>Respirator Selection</b>	<b>AIR PURIFYING HALF FACEPIECE</b>	<b>AIR PURIFYING FULL FACEPIECE</b>	<b>AIRLINE FULL FACEPIECE “DELMONO X” or Ambient Air Breathing Apparatus (No Egress Bottle)</b>	<b>SELF-CONTAINED BREATHING APPARATUS “SCBA”<sup>7</sup> or Supplied Respirator w/Egress Bottle<sup>7</sup></b>
<b>Respiratory Hazard</b>	<b>3M Brand 6000 Approved for up to 10X limit</b>	<b>MSA Ultratwin (MSA Ultravue)<sup>9</sup></b>		
protection guidance.				

1 -- May not be a good choice due to limited air supply and weight of apparatus.

2 -- Survivair 1003 Cartridge  
 MSA GMC Cartridge  
 (MSA GML)

3 -- Other

4 -- May not be a good choice due to cumbersome air supply lines.

5 -- The agent of concern is Legionnaires disease bacteria.

6 -- Respirator will require appropriate retaining holders for the filters

7 -- Training Required

8 -- Welding in “tight” spaces with reduced general air flow (e.g., welding tubes inside boilers) has been documented to produce fume levels in excess of ACGIH limits. Use local exhaust ventilation to reduce airborne fume levels. Discuss with Safety & Industrial Hygiene Specialist.

9 -- Full-face canister respirator. Recommended canister given in parenthesis.

10 -- Welding more than a few minutes and gas-type welding may produce immediate dangers to life and health (IDLH) conditions in confined spaces. This respirator not approved for IDLH.



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**ATTACHMENT D - EMPLOYEE VOLUNTARY USE OF FILTERING FACEPIECE (DUST MASK) RESPIRATORS**

**EMPLOYEE VOLUNTARY USE OF  
FILTERING FACEPIECE (DUST MASK) RESPIRATORS**

Supervisor or designee is responsible for reviewing this Appendix with the employee who is not on the company respirator program and who chooses to use a filtering face piece (dust mask) voluntarily within an environment where PPL does not require that a respirator be used.

**APPENDIX D TO §1910.134 (Mandatory) INFORMATION FOR EMPLOYEES USING RESPIRATORS WHEN NOT REQUIRED UNDER THE STANDARD**

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
- \*5. Clean and maintain respirator consistent with the guidelines of the PPL EU Safety Procedure on Respiratory Protection.
- \*6. Identify the work area and type respirator to be used.  
Location, task, type of airborne dust:  
Type respirator:

Information of this Appendix reviewed with employee:

\_\_\_\_\_  
(Supervisor/designee signature)

\_\_\_\_\_  
(Employee's Signature)

To receive PQS credit, please return this signed form to:  
Attn: PQS, entry  
Technical Training Center (WAL)

PQS Input:  
\_\_\_\_\_  
Operator's Initials  
\_\_\_\_\_  
Date

\*Follow instructions for Pandemic event.



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**ATTACHMENT E - FIT FACTORS**

**FIT FACTORS**

EFFECTIVE JANUARY 1, 1996

<u>Respirator Type</u>	<u>Minimum Fit Factor</u>
Negative Pressure	
Half-mask Respirator	10
Full-face Respirator	50
Powered Air Purifying (PAPR)	Pass equivalent respirator body type in negative pressure mode.
Airline Supply	Pass equivalent respirator body type in negative pressure mode.
SCBA	Pass equivalent respirator body type in negative pressure mode.
Bubble Hood	Fit test not required. Follow SSES Guidelines.



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**ATTACHMENT F - RESPIRATOR PROTECTION FACTORS (PF)**

**RESPIRATOR PROTECTION FACTORS (PF)**

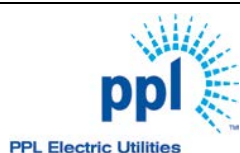
Respirator Protection Factors (PF), also known as assigned protection factors, are values assigned to a given class of respirators which determine the conditions under which that type of respirator may be used. For example:

1. Air monitoring for coal dust on the tripper floor finds dust levels of  $12 \text{ mg/m}^3$ . A half mask respirator has a protection factor (PF) of 10 or ten times the acceptable limit of  $2 \text{ mg/m}^3$ . This means a half-mask respirator may be used as long as workplace conditions were less than  $20 \text{ mg/m}^3$  ( $10 \times 2 \text{ mg/m}^3 = 20 \text{ mg/m}^3$  **maximum** for this type respirator). The half-mask respirator is appropriate for these tripper floor conditions.
2. At another location, air monitoring disclosed airborne coal dust levels of  $35 \text{ mg/m}^3$ . We know this exceeds the protection factor of a half-mask respirator (previous example), but is a full face respirator acceptable? The protection factor for a full face respirator, 50, times the OSHA limit of  $2 \text{ mg/m}^3$ , means that the full face respirator may be used up to  $100 \text{ mg/m}^3$  of coal dust. The full face respirator, with proper cartridge, is acceptable for this  $35 \text{ mg/m}^3$  environment.

While the protection factor determines the degree of protection we can expect to achieve through using a given type of respirator, employee fit testing determines the effectiveness of one respirator on the face of that individual for one point in time. Because of the many differences that could diminish actual fit of a respirator in field use (aging respirator body, beard growth) the minimum fit factor required by the fit testing program is ten times the respirator type's protection factor in the air purifying mode. This approach increases the safety factor in the use of respiratory protection.

The following protection factors chart is based on NIOSH Respirator Decision Logic (DHHS NIOSH Pub. No. 87-108) and ANSI Z88.2, 1992.

<b>Protection Factor</b>	<b>Type of Respirator*</b>
0	Nuisance dust or nuisance odor.
10	Air Purifying - Disposable - (with Quantitative fit testing).
10	Air Purifying - Half Facepiece
50	Air Purifying - Full Facepiece
25	Powered Air Purifying Respirator with loose fitting hood or helmet
50	Powered Air Purifying Respirator (PAPR) with full face
25	Constant Flow, Air Line, with hood or helmet.
50	Constant Flow, Air Line, with half mask respirator
50	Constant Flow, Air Line, with full face respirator



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1,000	Powered Air Purifying Respirator (full face), constant flow air line , and helmet consistent with 10 CFR 20, Appendix A.
10,000**	Self-Contained Breathing Apparatus (SCBA) pressure demand

- \* See also Respirator Selection Guide, Appendix C
- \*\* ANSI Z88.2 1992: Although positive pressure respirators are currently regarded as providing the highest level of respiratory protection, a limited number of recent simulated workplace studies concluded that all users may not achieve protection factors of 10,000. Based on this limited data, a definitive assigned protection factor could not be listed for positive pressure SCBAs. For emergency planning purposes where hazardous concentrations can be estimated, an assigned protection factor of no higher than 10,000 should be used.



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**ATTACHMENT G - MEDICAL EVALUATIONS**

**MEDICAL EVALUATIONS**

- (a) History - A medical and work history **in accordance with OSHA regulations**.
- (b) Physical - A hands-on **Medical** examination which includes: vital signs (blood pressure, pulse, respiration); height; weight; evaluation of heart; lungs; ears, nose and throat; abdomen; back and extremities. Special concentration on potential problem areas elicited from medical history shall be performed.
- (c) Chest X-ray - (**every three years**) PA (14" x 17") - Not to be given to pregnant women. Chest x-ray need not be given to those employees who have had an equivalent x-ray within twelve months and sign a release to make it available to the Company. Evidence of said x-ray must be provided within one month to affect medical clearance.
- (d) Pulmonary Function - to include:
  - a. Forced vital capacity (FVC) and percent of predicted
  - b. Forced expiratory volume/one second ( $FEV_1$ ) and percent of predicted
  - c.  $FEV_1/FVC$
  - d. Peak expiratory flow rate (PEFR) and percent of predicted.
  - e. Forced expiratory flow rate - 25-75% (FEF 25-75) and percent of predicted
- (e) Complete Blood Count - (CBC) to include hemoglobin, hematocrit test, white cell count cell differential analysis, cell morphology and platelets.
- (f) Urine dipstick, to include sugar, albumin, protein, and specific gravity. Microscopic analysis when positive albumin or indications of blood.
- (g) Electrocardiogram (EKG), 12 lead, all employees over 40 and as required by history or physical exam.
- (h) Fasting lab work including an 18-panel chemistry.



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**ATTACHMENT H - RESPIRATOR CLEANING AND DISINFECTION**

**RESPIRATOR CLEANING AND DISINFECTION**

**It is PPL Electric Utilities responsibility to provide clean disinfected respirators to our employees who use them. This Appendix defines the recommended guidelines to achieve that goal.**

**1.0 Respirator Assignment**

There are two conditions of respirator assignment: (A) Respirators are assigned to an individual for his personal use and care; (B) Respirators are assigned to an individual for use, are returned for cleaning, and then assigned to another individual for use, etc.

In the first case (A), there is no concern for cross contamination, for someone to get another person's "germs." In this case, the individual cleans his or her own respirator in "Respirator Cleaner/Disinfectant." This approved chemical product aids in cleaning respirators, but is not to be relied upon to disinfect respirators well enough to pass them from one user to another user.

For the second case (B), a Respirator Cleaner is used to clean the respirator and a Disinfectant is used to destroy harmful microorganisms to make the respirators free from causing infection.

**1.1 Respirator Cleaning:**

**1.1.1 Respirators Issued for Exclusive Use of Individuals, Cleaned by Same**

- a. Remove cartridges and discard. Also, remove the cartridge receptacle gaskets and place in container for cleaning.
- b. Using proper eye and hand protection, prepare MSA cleaner/disinfectant (cat. #907597) according to manufacturer's instruction in a clean container, labeled "For Respirator Cleaning Only," Figure #1. Use a soft scrub brush to eliminate stubborn soil and dirt. Wash until clean.
- c. Discard cleaner/disinfectant, rinse container, and then fill with water not to exceed 110° F to rinse masks. Rinse masks thoroughly, and then discard water. NOTE: Cleaner/Disinfectant solution can be discarded down normal drains.
- d. The cleaned and disinfected respirator should be rinsed thoroughly with clean water (110° F maximum) to remove all traces of cleaner/disinfectant. This is very important to prevent dermatitis.



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- e. Allow to dry on a clean surface or hung within clean area.
  - f. Reassemble and inspect to insure all parts are installed correctly and in the proper condition.
  - g. Attach plastic lens cover: MSA full face only (cat. #907597).
  - h. Place clean and disinfected respirator in a new plastic storage bag (cat. #304730). Store in a single layer with the face piece and exhalation valve in a more or less normal position to prevent the rubber from taking a permanent distorted "set."
- 1.2 Respirators assigned to individuals where **mechanical means** of cleaning is available.
- 1.2.1 Used respirators are to be stored in a container labeled, "**Dirty Respirators Only**," Figure #2.
  - 1.2.2 Remove cartridges and discard. Also, remove the cartridge receptacle gaskets and place in sink or wash tub for cleaning.
  - 1.2.3 Using proper eye and hand protection, prepare MSA cleaner/disinfectant (cat. #907597) according to manufacturers' instruction in a clean sink or wash tub, labeled "**For Respirator Cleaning Only**," Attachment #1. Use soft scrub brush and scrub respirators to eliminate stubborn soil and dirt. Wash until clean.
  - 1.2.4 Discard cleaner/disinfectant, rinse sink or wash tub, then fill with water not to exceed 110° F to rinse masks. Rinse masks thoroughly. Then, place rinsed masks in dishwasher. NOTE: Cleaner/Disinfectant solution can be discarded down a normal drain.
  - 1.2.5 Disinfect as follows: After adding 1 cup of chlorine bleach to a household sized dishwasher, run through a regular wash cycle. This process disinfects and rinses respirators thoroughly. Rinsing with clean water (110° F maximum) removes all trace of cleaner/disinfectant. This is very important to prevent dermatitis.
  - 1.2.6 The respirators may be allowed to dry by themselves on a clean surface. They may also be hung from a horizontal wire, like drying clothes, in a heated cabinet. The temperature in the drying cabinet shall be a minimum of 90° F. to a maximum of 110° F. Care must be taken not to damage the face piece.
  - 1.2.7 Reassemble and inspect to assure all parts are installed correctly and in the proper condition.
  - 1.2.8 Attach plastic cover lens: MSA full face only. (Cat. #376508)





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- 1.2.9 Place clean and disinfected respirator in a new plastic storage bag (Cat. #304730). Store in a single layer with the face piece and exhalation valve in a more or less normal position to prevent the rubber from taking a permanent distorted "set."
- 2.0 Respirator Disinfecting Following Fit Testing
  - 2.1 Remove cartridges and discard.
  - 2.2 **Disinfection** - In a clean container labeled "For Respirator Cleaning Only" mix daily a solution of ¼ cup chlorine bleach to one gallon of water (water not to exceed 110°F) using proper eye and hand protection (i.e. safety glasses and rubber/vinyl gloves):
    - 2.2.1 Immerse respirator in the solution for two minutes, agitate.
    - 2.2.2 Remove and drain disinfectant from respirator.
  - 2.3 **Rinse 1** - Immerse respirator repeatedly in **first** container of **clean** water (water not to exceed 110°F) to remove disinfectant solution. Container to be labeled "For Respirator Cleaning Only."
    - 2.3.1 Remove respirator and shake vigorously.
  - 2.4 **Rinse 2** - Immerse respirator repeatedly in a **second** container of **clean** water (water not to exceed 110°F) to remove any remaining traces of disinfect solution. Container to be labeled "For Respirator Cleaning Only." The disinfected respirator should be rinsed thoroughly to remove all traces of disinfectant solution. This is very important to prevent dermatitis.
    - 2.4.1 Remove respirator and shake vigorously.
  - 2.5 Allow to dry on a **clean** surface or pat dry with fresh paper towel.
  - 2.5 Manually dry adapter tube with pipe cleaner



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**ATTACHMENT H – FIGURE 1, FOR RESPIRATOR CLEANING ONLY**

**For Respirator Cleaning Only**

For application to any respirator cleaning container, sink or tub which is dedicated and used for the sole purpose of cleaning respirators.





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**ATTACHMENT H - FIGURE 2**

**Dirty Respirators Only**

For application to containers where dirty respirators are stored until cleaning.





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**ATTACHMENT I - COMPRESSED AIR - BREATHING QUALITY**

The Occupational Safety & Health Act, 29 CFR 1910.134(d) (1) mandates that breathing air quality should at least meet the requirements of "Grade D" as specified in the Compressed Gas Association Standard G-7.1. However, the following specification/description shall be adhered to when supplying breathing quality air for use within PPL:

AIR; dry (dew point -70 degrees F. Maximum), breathable, derived from compressed atmospheric air (not from the mixing of and blending of Oxygen and Nitrogen), to be tested to assure it meets with minimum requirements for Grade "D" breathing air as described in the Compressed Gas Association Commodity Specification G-7.1 (most recent revision). Gas container shall be equipped to permit transfer into a cylinder fitted with CGA #346 fittings at a pressure of either 2400 psig or a CGA #347 for pressures above 2400 psig to 5500 psig.

**REQUIRED CHARACTERISTICS**

OXYGEN CONTENT:	Shall be between 19.5% and 23.5% as Oxygen
CARBON MONOXIDE:	Less than 10 Molar ppm by volume
CARBON DIOXIDE	Less than 1000 Molar ppm by volume
CONDENSED HYDROCARBONS:	Less than 5 milligrams per cubic meter
TOTAL CONTAMINATES:	Less than 1% including Ar, CO, CO <sub>2</sub> & CH <sub>4</sub>
DEW POINT:	-70 Degrees maximum
CAS REGISTRY NO.:	25635-88-5
SPECIAL REQUIREMENTS:	Commodity must meet or exceed the above specification.



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**ATTACHMENT J - LOW PRESSURE AIR SAMPLING INSTRUCTIONS FOR DELMONOX\*  
PORTABLE FILTRATION UNITS**

**LOW PRESSURE AIR SAMPLING  
INSTRUCTIONS FOR  
DELMONOX\* PORTABLE FILTRATION UNITS**

Low Pressure Air Sampling Instructions for use with LOW PRESSURE SAMPLING KIT for the purpose of verifying the suitability of a compressed air source for use as respirable air. It assumes that the kit has been conditioned by the System Chemical Laboratory and the unit has been cleaned of any visible dirt or grease. Should there be any question to the suitability of this procedure for the equipment in hand, do not proceed. Immediately contact the Construction Tool Repair Foreman in Hazleton for instructions.

**INSTRUCTIONS:**

1. Remove the sampling manifold from the kit and attach to the DELMONOX unit at one of the standard schrader hose connections.
2. Remove the protective quick-disconnect fittings from the gas sampling bulb and attach to the sampling manifold. Note: The valve bodies on the sampling valve have a set of arrows to indicate direction of flow. The arrow should always point from left to right away from the manifold.
3. Utilizing the delivery pressure control regulator, found on the lower back side of the DELMONOX unit, increase the delivery pressure to a minimum of 80 psig.
4. Open the small black handled plastic vent valve, located beneath the pressure gauge on the sample manifold, and permit the manifold to vent for approximately three (3) minutes.
5. Shut off the venting valve and verify that the manifold pressure gauge reads 80 psig or greater. If the air pressure is adequate, record the value on the sampling sheet. If not, go back to step #3.
6. Slowly crack the top valve on the gas sampling cylinder, and verify that the cylinder is pressurized. Close the valve. Note: If the cylinder is not pressurized, do not use that cylinder. Make a note of the cylinder number and return the unused cylinder with the regular gas samples.

Open the bottom valve and then the top valve. Allow the air to purge through the cylinder for approximately five (5) minutes. Close the top valve and read the manifold pressure gauge. Verify that the pressure is 80 psig or greater and then close bottom valve.

8. Reconnect the protective end caps to the sampling cylinder before returning the cylinder to shipping container.



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9. Repeat the procedure from step #2 to provide a duplicate sample from each DELMONOX unit.
10. Place the laboratory copy of the sampling form inside the shipping container and ship the container to the System Chemical Laboratory, Attn. Micro-Analytical Section. Mail the original to Administrator Tool Foreman, Hazleton and retain the third copy for your record.

\* While this procedure specifically addresses DELMONOX units, comparable procedures must be followed when sampling other equivalent Air Filtration Supply systems.



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**ATTACHMENT K - AIR SAMPLING INSTRUCTION FOR COMPRESSOR FILL STATIONS**

**AIR SAMPLING INSTRUCTION FOR COMPRESSOR FILL STATIONS**

AIR SAMPLING INSTRUCTION FOR use with PPL HIGH PRESSURE SAMPLING KIT for the purpose of verifying the suitability of a compressed air source for use as respirable air. It assumes that the kit has been conditioned by the System Chemical Laboratory and the unit has been cleaned of any visible dirt or grease. Should there be any question to the suitability of this procedure for the equipment in hand, do not proceed. Immediately contact the Construction Tool Repair Foreman in Hazleton for instructions. Two samples shall be taken before and after each fill cycle.

**INSTRUCTIONS:**

1. Once the compressor and its receiver are pressurized to operating pressure, the first set of samples may be drawn.
2. Remove the caps on each end of the sample cylinders. Slowly crack the discharge valve of the cylinder and verify that the cylinder is pressurized. Note: If the cylinder is not pressurized, do not use the cylinder. Make a note of the cylinder number and return the unused cylinder with the regular gas samples.
3. Attach the cylinder to the fill hose of the station.
4. Adjust the regulator to 200 psi and open the inlet valve of the sample cylinder. Note: The discharge valve should still be open.
5. Slowly open the fill valve on the station and allow compressed air to purge the sample cylinder for approximately 5 minutes.
6. After the purge is complete, close the fill valve on the station, then the discharge valve on the sample cylinder.
7. Place the sample cylinder (connected to the fill hose) in the water filled station.
8. Fill the cylinder to 1000-1400 psi in accordance with the compressors operating instructions.
9. Close off the inlet valve of the cylinder, depressurize the fill hose, and connect the caps to both ends of the sample cylinder.
10. Repeat from step #2 for the second sample.
11. After completing the 2 samples, the filling of the pressurized cylinders may begin. Record the serial numbers of the SCBA cylinders being filled on the sample form.
12. After the fill cycle is completed, fill two additional High Pressure Sample Cylinders in accordance with this procedure starting with step #4.
13. Place the laboratory copy of the sampling form inside the shipping container and ship the container to the System Chemical Laboratory, Attn. Micro-Analytical Section. Mail the original to Administrator Tool Foreman, Hazleton and retain the third copy for your records.



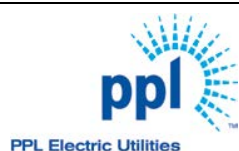
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### **1.0 PURPOSE/SCOPE**

- 1.1 This procedure has been developed to meet compliance with the Occupational Safety and Health Administration Standard 29 CFR 1910.1025 General Industry and 29 CFR 1926.62 Construction, to insure safe working conditions for employees when working with lead.
- 1.2 This section applies to all work where an employee may be occupationally exposed to lead. Construction work is defined as work for construction, alteration and/or repair, including painting or decorating. It includes but is not limited to the following:
  - 1.2.1 Demolition or salvage of structures where lead or materials containing lead is present;
  - 1.2.2 Removal or encapsulation of materials containing lead;
  - 1.2.3 New construction, alteration, repair, or renovation of structures, substrates, that contain or may have contained lead;
  - 1.2.4 Installation or repair of products containing lead;
  - 1.2.5 Lead contamination/emergency cleanup;
  - 1.2.6 Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed;
  - 1.2.7 Maintenance operations associated with the construction activities within this paragraph;

### **2.0 RESPONSIBILITY**

- 2.1 Line management is responsible for implementing this program.
- 2.2 Environmental Health & Safety is available for consultation and guidance on the issues concerning lead.
- 2.3 Each employee is responsible to properly wear personal protective equipment and follow good hygiene practices when exposed to lead.
- 2.4 Contractors are required to implement their own lead compliance program for exposure to lead. Line management is to provide the contractor with information about where exposure might occur on our property.



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### **3.0 APPLICABILITY**

- 3.1 This procedure establishes compliance with the Occupational Safety and Health Administration Standard 29 CFR 1910.1025 General Industry and 1926.62 Construction, to insure safe working conditions for employees when working with lead.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 *Action Level (AL)* - The action level triggers other components of this procedure such as exposure monitoring, medical surveillance and training.
- 4.2 *Competent person* - A person who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
- 4.3 *Lead (Pb)* - Pure lead is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with other various other substances to form lead compounds such as lead soaps.
- 4.4 *Permissible Exposure Limit (PEL)* - This is the highest level of lead in air, which an employee can be permissibly exposed to over an 8-hour workday. However, since this is an 8-hour average, exposures above the PEL are permissible as long as the 8-hour workday average does not exceed this level.

### **5.0 MAIN BODY**

#### **5.1 Exposure Limits**

- 5.1.1 For this program, the acceptable limits of exposure, above which engineering and/or respiratory protection is required, are the following:
- "LEAD," Action Limit (AL), 30 micrograms per cubic meter of air (30 ug/m<sup>3</sup>). This Action Level is employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 ug/m<sup>3</sup>) calculated as an 8-hour time weighted average (TWA).
  - "LEAD," Permissible Exposure Limit (PEL), 50 micrograms per cubic meter of air (50 ug/m<sup>3</sup>). The Permissible Exposure Limit is the highest level of airborne concentration of lead that a person can be exposed to in an 8-hour period.



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5.1.2 Lead in paint: The Agency on Housing and Urban Development established a Federal Lead Standard for the protection of infants and children in 1978. This standard established the permissible surface paint limit at 1.0 milligram lead per centimeter squared surface area (1.0 mg/cm<sup>2</sup>). The 1991 statement release from the Centers for Disease Control established 0.5% (5,000 parts per million) by weight to be the limit. Both of these values provide insight into potential lead hazards, however, workplace lead concerns are based on airborne lead levels. For example, uncontrolled (dusty) removal of 0.5% lead, which produces 60 ug/m<sup>3</sup> in air, constitutes a hazard. Controlled removal of 1% lead paint with airborne 20 ug/m<sup>3</sup> does not constitute an airborne hazard.

### **5.2 Exposure Monitoring**

5.2.1 Environmental Health & Safety has established general monitoring protocols to evaluate employee's exposure to lead. Section 5.0, Employee Airborne Exposure Assessment, of this document provides additional specific guidelines.

5.2.2 Monitoring of PPL employees by outside contractors shall be conducted only by Industrial Hygiene Consultants who are approved by Environmental Health & Safety. Internal air monitoring shall be conducted by persons who have been trained and are recognized by Environmental Health & Safety

5.2.3 Require PPL Industrial Hygiene air monitoring sample data sheet for all PPL employees monitoring. All line items should be completed on this data sheet. All sampling data sheets shall be sent to Environmental Health & Safety for analysis and review.

5.2.4 All employee exposure monitoring shall be conducted in accordance with Environmental Health & Safety Industrial Hygiene Monitoring Guidelines.

### **5.3 Employee Airborne Exposure Assessment**

5.3.1 PPL must determine if employees are exposed at or above the AL of (30 ug/m<sup>3</sup>) measured as an 8-hour TWA. The initial exposure assessments of all workplaces and operators must be conducted where lead or lead-containing materials are being used, disturbed or removed.

5.3.2 Initial employee assessments are required for the below listed tasks:

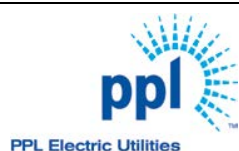
- a. Where lead containing coatings or paint are present
- b. Manual demolition of structures (e.g. drywall)
- c. Manual scraping (dry)
- d. Manual sanding (dry)
- e. Heat gun applications
- f. Power tool cleaning with dust collection systems
- g. Spray painting with lead paint



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- h. Tasks where an employee performing the task may be exposed to lead in excess of PEL
- 5.3.3 Prior to and during the initial employee assessment, it is mandatory to provide employee protective measures that presume lead exposures to be greater than the PEL.
  - a. The level of respiratory protector during the initial employee assessment can only be reduced when it is demonstrated that actual employee exposures are below the respiratory protection action trigger levels.
- 5.3.4 The employee exposure shall be evaluated as that exposure that would occur if the employee were not wearing a respirator. All exposure assessment evaluations must be made in accordance with the following:
  - a. Air samples must be collected **outside** of a respirator as near as practical to the employee's breathing zone.
  - b. Air samples collected **inside** of a respirator (abrasive blast respirator and hood/helmet) do **not** meet the OSHA requirement and shall not be used for determining compliance with PEL.
- 5.3.5 Historical data, within the last 12 months of specific work activities in 5.2 of this section, may be used to eliminate the obligation to conduct an initial employee exposure assessment of periodic monitoring. The data must meet the following requirements:
  - a. The data must be scientifically sound and have been collected using methods that are sufficiently accurate and precise.
  - b. Essentially the same processes and work practices were in use when historical data was obtained.
  - c. Essentially the same characteristics of lead containing material being handled when historical data was obtained.
  - d. Essentially the same environmental conditions prevailing when historical data was obtained.
- 5.3.6 Negative initial air monitoring - If representative employee exposures to airborne concentrations of lead are at or below the AL (30 ug/m<sup>3</sup>), for specific job activities, then measurements need not be repeated, unless there is a change in production, process or control measures.
- 5.3.7 Positive initial air monitoring - If the initial monitoring reveals employee exposure to be at or above the AL but below the PEL (50 ug/m<sup>3</sup>), personal monitoring must be conducted every 6 months. This air monitoring shall be performed at the required frequency until at least two



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consecutive measurements, taken at least 7 days apart, are below the action level at which time monitoring may be discontinued.

- 5.3.8 If the initial monitoring reveals employee exposure above the PEL (50 ug/m<sup>3</sup>), monitoring shall be repeated quarterly. This air monitoring shall be performed at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are at or below the PEL but at or above the action level, then the frequency of air monitoring will follow the requirements in 5.7.
- 5.3.9 Whenever there has been a change of equipment, process, control personnel or a new task have been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed above the PEL, additional air monitoring shall be conducted.

**5.4 Lead Paint Bulk Sample Collection and Interpretation**

- 5.4.1 Due to renovation or demolition activities and the use of lead based paint, bulk lead chip samples need to be collected.
- 5.4.2 To properly identify lead content, EHS recommends laboratory analysis of paint chips. For laboratory analysis, approximately one tablespoon of paint chips is required for a sufficient amount of sample material. The approved Environmental Protection Agency method for analysis is SW-846.
- 5.4.3 Contact Environmental Health & Safety for numbered bulk sample bottles.

**5.5 Employee Notification**

- 5.5.1 The Health & Safety Specialist who conducted or was responsible for employee air monitoring shall give written notification of the results of monitoring to each employee who was monitored within 5 working days of the receipt of results from the laboratory.
- 5.5.2 When the results exceed the PEL of (50 ug/m<sup>3</sup>), the statement "the limit was exceeded" shall be included in the letter.
- 5.5.3 When the results exceed the PEL of (50 ug/m<sup>3</sup>), the letter shall describe the corrective action to be taken to reduce exposure to or below the acceptable limit.
- 5.5.4 Local Line Management will be contacted by Environmental Health & Safety to implement feasible engineering control measures.



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5.6 Regulated Areas

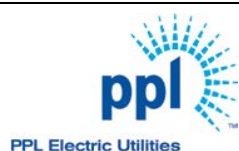
- 5.6.1 Regulated areas shall be established at employee work areas or job activities where airborne lead levels exceed the AL of (30 ug/m<sup>3</sup>).

These areas shall be regulated during certain processes such as any repair or renovation activities or other activities that disturb in place lead containing material. When that phase of work is complete, the area may no longer be regulated.

- 5.6.2 The entrances to areas and spaces defined as regulated areas shall be posted with 10-inch by 14-inch signs with the following information:

**WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING**

- 5.6.3 O.S.H.A. 1910.145 "Warning Signs" - Specifications for accident prevention signs. Warning signs, orange and black, are used to indicate a hazardous situation which has some probability of death or serious injury.
- 5.6.4 The signs must be cleaned as necessary so the legend is readily visible.
- 5.6.5 Engineering controls in regulated areas must be implemented to reduce and maintain employee exposures to lead at or below the permissible exposure limit to the extent that such controls are feasible.
- a. Mechanical ventilation may be used to control lead exposure. The performance of the mechanical ventilation in controlling exposures must be evaluated. The mechanical ventilation exhaust must be HEPA filtered.
- 5.6.6 Access to regulated areas is limited to authorized persons. Authorized persons must have medical clearance to wear a respirator, had an initial blood lead level medical screening and training. Form 4171 - Regulated Area Entry Log, shall be maintained for all employees who enter the regulated area and, upon completion, sent to EHS
- 5.6.7 The following activities are prohibited within regulated areas:
- a. Consuming food or beverages (except drinking water is permitted)  
b. Smoking  
c. Chewing tobacco or gum  
d. Applying cosmetics
- 5.6.8 Create a step-off zone immediately adjacent to the regulated area with suitable barrier tape or rope. Personal protective equipment (suits, respirators, gloves, etc.) are donned and removed within this area only.



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- 5.6.9 It is the responsibility of the supervisor to assure that regulated areas are posted prior to and during the time personnel enter those areas.
- 5.6.10 Section 5.2 of this document lists work activity that may require the work area to be regulated.
- 5.6.11 Upon inspection of regulated areas by the supervisor or designated representative, the Regulated Area Termination Form (Appendix D) must be completed, signed and sent to the Safety & Industrial Hygiene Specialist. Regulated Area signs and posting may then be removed.

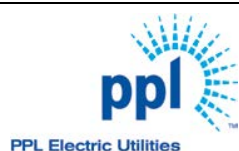
### 5.7 Housekeeping of Regulated Areas

- 5.7.1 All surfaces within regulated areas must be cleaned at free as practicable of accumulations of lead prior to dispensing with the regulated area requirements.
- 5.7.2 With respect to the cleanliness of change areas, lunchrooms, and eating areas, surface contamination should not exceed 200 ug/ft(2) (OSHA CPL 2-2.58).
- 5.7.3 HEPA vacuuming is the recommended method for cleaning. Shoveling, dry and wet sweeping and brushing may be used only where vacuuming or other equally effective methods are deemed not to be effective.
- 5.7.4 Compressed air **may not** be used to clean surfaces except when documented engineering studies indicate that it is the only feasible method for cleaning, and when it is done in compliance with Safety Rules and procedures.
- 5.7.5 When sampling results in regulated areas show employee exposure above the PEL, lead contaminated refuse and waste materials should be disposed of in covered containers or suitable bagging (such as double bagging). Environmental Management Department (EMD) must be contacted to determine if the waste material should be classified as hazardous and properly disposed.  
Call EMD at (610) 774-4184 or ETN 220-4184 and in case of an emergency contact EMD at (610) 774-5566 or ETN 220-5566.

### 5.8 Respiratory Protection

- 5.8.1 The Safety rules and Procedures on Respiratory Protection and departmental programs detail appropriate procedures for the use of respirators. Respirator selection will be in accordance with the following:
  - a. Respiratory Protection for Lead Aerosols





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Airborne Concentration of Lead or Condition of Use:	Required Respirator:
Not in excess of 500 micrograms/cubic meter (10X PEL)	Half mask, air-purifying respirator equipped with high efficiency filters. Half mask supplied air respirator operated in command (negative Pressure) mode.
Not in excess of 1,250	Loose fitting hood or helmet powered air-purifying respirator with high efficiency filters. Hood or helmet supplied air respirator operated in a continuous flow mode—e.g. type CE abrasive blasting respirators operated in a continuous flow mode.
Not in excess of 2,500 micrograms/cubic meter (50X PEL)	Full-face piece, air-purifying respirator with high efficiency filters. Tight fitting powered air-purifying respirator with high efficiency filters. Full-face piece supplied air respirator operated in demand mode. Half mask or full-face piece supplied air respirator operated in a continuous-flow mode. Full-face piece self-contained breathing apparatus (SCBA) operated in demand mode.
Not in excess of 50,000 micrograms/cubic meter (1000X PEL)	Half mask supplied air respirator operated in pressure demand or other positive-pressure mode.
Not in excess of 100,000 micrograms/cubic meter (2000X PEL)	Full-face piece supplied air respirator operated in pressure demand or other positive-pressure mode—e.g. type CE abrasive blasting respirators operated in a positive-pressure mode.
Greater than 100,000 micrograms/cubic meter, unknown concentration of fire fighting.	Full-face piece SCBA operated in pressure demand or other positive-pressure mode.

5.8.2 Respirators, disposable coveralls, and gloves shall be worn at all times when working in regulated areas. Tape ankles, wrists and collar to reduce dust penetration.

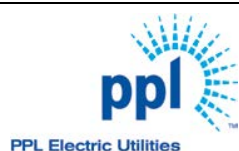
5.8.3 Proper whole body protective equipment for lead regulated areas:

- a. Disposable garment, white, with attached hood and boots. White overall must be marked with yellow "X" marked on back designating use in lead regulated area. **Note:** Unmarked white coverall is to be used in asbestos areas only.

Cloth coverall: Contact Corporate Tool Facility

Boots: Latex cover, (reuse during day, dispose end of day or when torn).





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- 5.8.4 Personal Vacuuming - A high efficiency (HEPA) vacuum cleaning shall be used to remove dust from the workers' outer clothes and shoes immediately upon exiting a regulated area and prior to leaving the area or removing disposable coveralls. Dust shall not be removed from clothing by blowing (compressed air) or shaking.
- 5.8.5 Protective clothing shall be removed immediately outside the regulated area prior to employees going to lunch, break or leaving the property.
- 5.8.6 Protective clothing to be disposed of shall be placed in a closed container, which will limit airborne dispersion of dust. Check with local results engineer or EHS for proper disposal.
- 5.8.7 Welding leathers, hard hats or other tools shall be vacuumed and/or water washed to remove residual lead dust prior to being removed from area. These items shall be as clean as practicable.
- 5.8.8 Reusable cloth coveralls, which come into direct contact with residual lead dust in regulated areas, shall be placed in containers and taken to the site's laundry.
- 5.8.9 During laundry:
- This clothing shall not be subjected to blowing or shaken to remove dust.
  - Establish a procedure at the laundry to place clothes into washing machines without exceeding exposure limits. This may include any of the following:
    - Removing clothes carefully to avoid creating airborne dust.
    - Wetting clothes prior to removing them from the container.
    - Local exhaust ventilation.
- 5.8.10 Employees who launder the protective clothing or equipment must be informed in writing of the potentially harmful effects of exposures to lead.
- 5.8.11 The containers of contaminated protective clothing and equipment are required to be labeled as follows:

**CAUTION:** CLOTHING CONTAMINATED WITH LEAD, DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS.

- 5.9 Medical Surveillance/Biological Monitoring  
(Ref. Appendix B, Section VIII)



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- 5.9.1 All employees who are authorized to enter and/or work in regulated areas will be required to take an **annual** health screening evaluation.
- 5.9.2 Any workers who may be potentially exposed to lead are required to take a one-time blood test for lead.
- 5.9.3 Environmental Health & Safety shall consult with Health Services to determine the full content of the health evaluation periodic maintenance. Consult OSHA Lead Monitoring for required blood monitoring.
- 5.9.4 Blood test analysis must be by an OSHA approved laboratory. Consult the OSHA Internet web site for approved laboratories.
- 5.10 EMPLOYEE TRAINING (MST 680)
  - 5.10.1 General Industry Standard - 29CFR -1910.1025 (I)(1)(i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the contents of Appendices A and B of this regulation.
  - 5.10.2 The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin and/or eye irritation exists:
    - a. Employees shall be given and trained on the information contained in the attached Appendix A, Substance Data Sheet for Occupation Exposure to Lead, and the attached Appendix B, Employee Standard Summary.
    - b. Review of the OSHA Lead standard.
    - c. An assessment of the hazard of lead and the specific nature of the operations which could result in exposure to lead above the action level.
    - d. The purpose, proper use and limitations of respirator.
    - e. The purpose and description of the medical surveillance program.
    - f. Engineering controls and work practices associated with the employee's work activities.
    - g. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies.
    - h. A review of the video *Working Safely With Lead* or equivalent. Site specific lead related issues such as operations that have exposure greater than the AL, engineering controls, work practices, PPE



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associated with specific job assignments and medical surveillance program.

### **5.11 Recordkeeping**

- 5.11.1 Exposure monitoring shall be obtained and retained according to the OSHA lead Standards 1910, 1926.62(n) and 1910.20. PPL Electric Utilities is responsible for obtaining records.
- 5.11.2 The Dispensary shall establish and maintain records of the medical surveillance program for affected employees according to OSHA 29CFR 1910.20.
- 5.11.3 Training records are to be kept by the affected departments for a minimum of three years.
- 5.11.4 The employer shall maintain or assure that a physician maintains medical records for at least 40 years, or for the duration of employment plus 20 years whichever is longer.

### **5.12 Program Audit**

- 5.12.1 It is the responsibility of Environmental Health & Safety to conduct audits of this lead program. Lead program auditing will be incorporated within the existing periodic Health Evaluation program. A report shall be prepared and sent to the appropriated managers of the affected department manager.
- 5.12.2 It is the responsibility of Environmental Health & Safety and line management to evaluate actual job activities.
- 5.12.3 Environmental Health & Safety is responsible to review regulated area entry logs and regulated area termination forms.

## **6.0 REFERENCES**

- 6.1 PPL Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS -**

- 7.1 [OSHA 29 CFR 1926.62 Lead](#)
- 7.2 [OSHA 29 CFR 1910.1020 Access to employee exposure and medical records](#)
- 7.3 [OSHA 29 CFR 1910.1025 Lead](#)
- 7.4 [OSHA 29 CFR 1910.145 Specifications for accident prevention signs & tags](#)



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### 8.0 TRAINING / SAFETY

8.1 All employees shall be trained on [MST 350, Lead Awareness CBT](#)

### 9.0 COMPLIANCE AND EXCEPTIONS - N/A

### 10.0 ATTACHMENTS

- 10.1 Attachment A - 1926.62 Substance Data Sheet for Occupational Exposure to Lead
- 10.2 Attachment B - 1926.62 Employee Standard Summary
- 10.3 Attachment C - Regulated Area Termination Form
- 10.4 [Form 4171 - Regulated Area Entry Log](#)

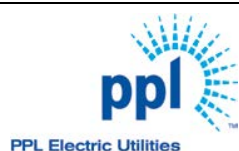
### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	06/28/2017	Effective	06/28/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Corrected and revised some regulatory citations, made formatting more consistent. Links to OSHA regulations and training are included also.			

Rev	00	Date	08/09/2012	Effective	08/09/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**ATTACHMENT A - 1926.62 Substance Data Sheet for Occupational Exposure to Lead**

**I. SUBSTANCE IDENTIFICATION**

- A. "Substance": Pure lead (Pb) is a heavy metal at room temperature and pressure is a basic chemical element. It can combine with various other substances to form numerous lead compounds.
- B. "Compounds Covered by the Standard": The word "lead" when used in this interim final standard means elemental lead, all inorganic lead compounds and a class of organic lead compounds called lead soaps. This standard does not apply to other organic lead compounds.
- C. "Uses": Exposure to lead occurs in several different occupations in the construction industry, including demolition or salvage of structures where lead or lead - containing materials are present; removal or encapsulation of lead - containing materials, new construction, alteration, repair or renovation of structures that contain lead or materials containing lead; installation of products containing lead. In addition, there are construction related activities where exposure to lead may occur, including transportation, disposal, storage, or containment of lead or materials containing lead on construction sites, and maintenance operations associated with construction activities.
- D. "Permissible Exposure": The permissible exposure limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air (50 ug/m (3)), averaged over an 8-hour workday.
- E. "Action Level": The interim final standard establishes an action level of 30 micrograms of lead per cubic meter of air (30 ug/m (3)), averaged over an 8-hour workday. The action level triggers several ancillary provisions of the standard such as exposure monitoring, medical surveillance, and training.

**II. HEALTH HAZARD DATA**

- A. "Ways in which lead enters your body." When absorbed into your body in certain doses, lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead, toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed. Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skins. When lead is scattered in the air as a dust, fume or mist it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, or chewing tobacco, or make-up which has lead on them. or handle them with hands contaminated with lead, this will contribute to ingestion. A significant portion of the lead you inhale or



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ingest gets into your blood stream. Once in your blood stream, lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in the blood and other tissues. An exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body system.

- B. "Effects of overexposure to lead" -- (1) "Short term (acute) overexposure." Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise, which develops quickly to seizures, coma, and death from cardio-respiratory arrest. A short term dose of lead can lead to acute encephalopathy. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems, and causes forms of health impairment and disease, which arise after periods of exposure as short as days or as long as several years.

(2) "Long-term (chronic) overexposure." Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headaches, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain. Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy. Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible. Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead may alter the structure of sperm cells, raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead, or who were exposed to lead themselves. Lead exposure also may result in





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decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born to parents, either one of whom were exposed to lead levels, are more likely to have birth defects, mental retardation, behavioral disorders, or die during the first year of childhood. Overexposure to lead also disrupts the blood-forming system, resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

(3) "Health protection goals of the standard." Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that a worker's blood level (BLL, also expressed as PbB) is maintained at or below forty micrograms per deciliter of whole blood (40 ug/dl). The blood lead levels of workers (both male and female workers) who intend to have children should be maintained below 30 ug/dl to minimize adverse reproductive health effects to the parents and to the developing fetus. The measurement of your blood lead level (BLL) is the most useful indicator of the amount of lead being absorbed by your body. Blood lead levels are most often reported in units of milligrams (mg) or micrograms (ug) of lead (1mg=1000 ug) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometime BLL's are expressed in the form of mg percent or ug percent. This is a shorthand notation for 100g, 100 ml, or dl. (References to BLL measurements in this standard are expressed in the form of ug/dl.)

BLL measurements show us the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues. BLL measurements merely show current absorption of lead, not the effect that lead is having on your body research into lead-related diseases, however, has focused heavily on associations between BLL's and various diseases. As a result, your BLL is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

Once your blood level climbs above 40 ug/dl, your risk of lead disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular BLL in a given person will cause a particular effect. Studies have associated fatal encephalopathy with BLLs as low as 150 ug/dl. Other studies have shown other forms of diseases in some workers with BLLs well below 80 ug/dl. Your BLL is a crucial indicator of the risks to your health, but one other factor is also extremely important. This factor is the length of time you have had elevated BLLs. The longer you have an elevated BLL, the greater the risk that large quantities of lead are being gradually stores in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage. The best way to prevent all forms of lead-related impairments and diseases -- both short term and long term -- is to maintain your BLL below 40 ug/dl. The provisions of the standard are designed with this end in mind.



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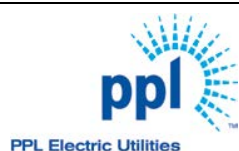
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Your employer has prime responsibility to assure that the provisions of the standard are complied with both the company and by individual workers. You, as a worker, however, also have a responsibility to assist your employer in complying with the standard. You play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own actions, and seeing that your employer complies with provisions governing his or her actions.

(4) "Reporting signs and symptoms of health problems." You should immediately notify your employer if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead or your ability to have a healthy child. You should also notify your employer if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases, your employer must make available to you appropriate medical explanations or consultations. These must be provided at no cost to you and at a reasonable time and place. The standard contains a procedure whereby you can obtain a second opinion by a physician of your choice if your employer selected the initial physician.

[57 FR 26627, May 4, 1993, as amended at 58 FR 34218, June 24, 1993]





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## **ATTACHMENT B - 1926.62 Employee Standard Summary**

This appendix summarizes key provisions of the interim final standard for lead in construction that you as a worker should become familiar with.

### **I. Permissible Exposure Limit (PEL) - Paragraph (C)**

The standard sets a permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air (50 ug/m(3)), averaged over an 8-hour workday, which is referred to as a time-weighted average (TWA). This is the highest level of lead in air to which you may be permissibly exposed over an 8-hour workday. However, since this is an 8-hour average, short exposures above the PEL are permitted so long as for each 8-hour work day your average exposure does not exceed this level. This interim final standard, however, takes into account the fact that your daily exposure to lead can extend beyond a typical 8-hour workday as the result of overtime or other alterations in your work schedule. To deal with this situation, the standard contains a formula which reduces your permissible exposure when you are exposed more than 8 hours. For example, if you are exposed to lead for 10 hours a day, the maximum permitted average exposure would be 40 ug/m(3).

### **II. Exposure Assessment - Paragraph (D)**

If lead is present in your workplace in any quantity, your employer is required to make an initial determination of whether any employee's exposure to lead exceeds the action level (30 ug/m (3) averaged over an 8-hour day). Employee exposure is that exposure which would occur if the employee were not using a respirator. This initial determination requires your employer to monitor workers' exposures unless he or she has objective data which can demonstrate conclusively that no employee will be exposed to lead in excess of the action level. Where objective data is used in lieu of actual monitoring the employer must establish and maintain an accurate record, demonstrating its relevancy in assessing exposure levels for current job conditions. If such objective data is available, the employer need proceed no further on employee exposure assessment until such time that conditions have changed and the determination is no longer valid.

Objective data may be compiled from various sources, e.g., insurance companies and trade associations and information from suppliers or exposure data collected from similar operations. Objective data may also comprise previously - collected sampling data including area monitoring. If it cannot be determined through using objective data that worker exposure is less than the action level, your employer must conduct monitoring or must rely on relevant previous personal sampling, if available. Where monitoring is required for the initial determination, it may be limited to a representative number of employees who are reasonably expected to have the highest exposure levels. If your employer has conducted appropriate air sampling for lead in the past 12 months, he or she may use these results, provided they are applicable to the same employee tasks and exposure conditions and meet the requirements for accuracy as specified in the standard. As with objective data, if such results are relied upon for the initial determination, your employer must establish and maintain a record as to the relevancy of such data to current job conditions.



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If there have been any employee complaints of symptoms which may be attributable to exposure to lead or if there is any other information or observations which would indicate employee exposure to lead, this must also be considered as part of the initial determination.

If this initial determination shows that a reasonable possibility exists that any employee may be exposed, without regard to respirators, over the action level, your employer must set up an air monitoring program to determine the exposure level representative of each employee exposed to lead at your workplace. In carrying out this air monitoring program, your employer is not required to monitor the exposure of every employee, but he or she must monitor a representative number of employees and job types. Enough sampling must be done to enable each employee's exposure level to be reasonably representing full shift exposure. In addition, these air samples must be taken under conditions which represent each employee's regular, daily exposure to lead. Sampling performed in the past 12 months may be used to determine exposures above the action level if such sampling was conducted during work activities essentially similar to present work conditions.

The standard lists certain tasks which may likely result in exposures to lead in excess of PEL and, in some cases, exposures in excess of 50 times the PEL. If you are performing any of these tasks, your employer must provide you with appropriate respiratory protection, protective clothing and equipment, change areas, hand washing facilities, biological monitoring, and training until such time that an exposure assessment is conducted which demonstrates that your exposure is below the PEL.

If you are exposed to lead, and air sampling is performed, your employer is required to notify you in writing within five working days of the air monitoring results which represent your exposure. If the results indicate that your exposure exceeds the PEL (without regard to your use of a respirator), then your employer must also notify you of this in writing, and provide you with a description of the corrective action that has been taken or will be taken to reduce your exposure.

Your exposure must be rechecked by monitoring, at least every six months if your exposure is at or over the action level but below the PEL. Your employer may discontinue monitoring for you if two consecutive measurements, taken at least seven days apart, are at or below the action level. Air monitoring must be repeated every three months if you are exposed over the PEL. Your employer must continue monitoring you at this frequency until two consecutive measurements, taken at least seven days apart, are below the PEL but above the action level, at which time your employer must repeat monitoring of your exposure every six months and may discontinue monitoring only after your exposure drops to or below the action level. However, whenever there is a change of equipment, process, control, personnel, or a new type of job is added to your workplace which may result in a new or additional exposure to lead, your employer must perform additional monitoring.



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**III. Methods of Compliance - Paragraph (E)**

Your employer is required to assure that no employee is exposed to lead in excess of the PEL as an 8-hour TWA. The interim final standard for lead in construction requires employers to institute engineering and work practice controls including administrative controls to the extent feasible to reduce employee exposure to lead. Where such controls are feasible but not adequate to reduce exposures below the PEL they must be used nonetheless to reduce exposures to the lowest level that can be accomplished by these means and the supplemented with appropriate respiratory protection.

Your employer is required to develop and implement a written compliance program prior to the commencement of any job where employee exposures may reach the PEL as an 8-hour TWA. The interim final standard identifies the various elements that must be included in the plan. For example, employers are required to include a description of operations in which lead is emitted, detailing other relevant information about the operation such as the type of equipment used, the type of material involved, employee job responsibilities, operating procedures and maintenance practices. In addition, your employer's compliance plan must specify the means that will be used to achieve compliance and, where engineering controls are required, include any engineering plans or studies that have been used to select the control methods. If administrative controls involving job rotation are used to reduce employee exposure to lead, the job rotation schedule must be included in the compliance plan. The plan must also detail the type of protective clothing and equipment, including respirators, housekeeping and hygiene practices that will be used to protect you from the adverse effects of exposure to lead.

The written compliance program must be made available, upon request, to affected employees and their designated representatives, the Assistant Secretary and the Director.

Finally, the plan must be reviewed and updated at least every six months to assure it reflects the current status in exposure control.

**IV. Respiratory Protection - Paragraph (F)**

Your employer is required to provide and assure your use of respirators when your exposure to lead is not controlled below the PEL by other means. The employer must pay the cost of the respirator. Whenever you request one, your employer is also required to provide you a respirator even if your air exposure level is not above the PEL. You might desire a respirator when, for example, you have received medical advice that your lead absorption should be decreased. Or, you may intend to have children in the near future, and want to reduce the level of lead in your body to minimize adverse reproductive effects. While respirators are the least satisfactory means of controlling your exposure, they are capable of providing significant protection if properly chosen, fitted, worn, cleaned, maintained, and replaced when they stop providing adequate protection.

Your employer is required to select respirators from the types listed in Table I of the Respiratory Protection section of the standard. Any respirator chosen must be approved by the Mine Safety and Health Administration (MSHA) or the National Institute for



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Occupational Safety and Health (NIOSH). This respirator selection table will enable your employer to choose a type of respirator which will give you a proper amount of protection based on your airborne lead exposure. Your employer may select a type of respirator that provides greater protection than that required by the standard; that is, one recommended for a higher concentration of lead than is present in your workplace. For example, a powered air purifying respirator (PAPR) is much more protective than a typical negative pressure respirator, and may also be more comfortable to wear. A PAPR has a filter, cartridge or canister to clean the air, and a power source which continuously blows filtered air into your breathing zone. Your employer might make a PAPR available to you to ease the burden of having to wear a respirator for long periods of time. The standard provides that you can obtain a PAPR upon request.

Your employer must also start a Respiratory Protection Program. This program must include written procedures for the proper selection, use, cleaning, storage, and maintenance of respirators.

Your employer must assure you that your respirator face piece fits properly. Proper fit of a respirator face piece is critical. Obtaining a proper fit on each employer may require your employer to make available two or three different mask types. In order to assure that your respirator fits properly and that face piece leakage is minimized, your employer must give you either a qualitative fit test or a quantitative fit test (if you use a negative pressure respirator) in accordance with Appendix D. Any respirator which has a filter, cartridge or canister which cleans the work room air before you breathe it and which requires the force of your inhalation to draw air through the filtering element is a negative pressure respirator. A negative pressure respirator supplies air to you directly. A quantitative fit test uses a sophisticated machine to measure the amount, if any, of test material that leaks into the face piece of your respirator.

You must also receive from your employer proper training in the use of respirators. Your employer is required to teach you how to wear a respirator, to know why it is needed, and to understand its limitations.

Your employer must test the effectiveness of your negative pressure respirator initially and at least every six months thereafter with a "Qualitative fit test." In this test, the fit of the face piece is checked by seeing if you can smell a substance placed outside the respirator. If you can, there is appreciable leakage where the face piece meets your face.

The standard provides that if your respirator uses filter elements, you must be given an opportunity to change the filter elements whenever an increase in breathing resistance is detected. You also must be permitted to periodically leave your work area to wash your face and respirator face piece whenever necessary to prevent skin irritation. If you ever have difficulty in breathing during a fit test or while using a respirator, your employer must make medical examination available to you to determine whether you can safely wear a respirator. The result of this examination may be to give you a positive pressure respirator (which reduces breathing resistance) or to provide alternative means of protection.



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V. Protective Work Clothing and Equipment - Paragraph (G)

If you are exposed to lead above the PEL as an 8-hour TWA, without regard to your use of a respirator, or if you are exposed to lead compounds such as arsenate or lead aside which can cause skin and eye irritation, your employer must provide you with protective work clothing and equipment appropriate for the hazard. If work clothing is provided, it must be provided in a clean and dry condition at least weekly, and daily if your airborne exposure to lead is greater than 200 ug/m(3). Appropriate protective work clothing and equipment can include coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets, and face shields or vented goggles. Your employer is required to provide all such equipment at no cost to you. In addition, your employer is responsible for providing repairs and replacement as necessary, and also is responsible for the cleaning, laundering or disposal of protective clothing and equipment.

The interim final standard requires that your employer assure that you follow good work practices when you are working in areas where your exposure to lead may exceed the PEL. With respect to protective clothing and equipment, where appropriate, the following procedures should be observed prior to beginning work:

1. Change into work clothing (Tyvek) and shoe covers in the clean section of the designated changing areas;
2. Use work garments of appropriate protective gear, including respirators before entering the work area; and
3. Store any clothing not worn under protective clothing in the designated changing area.

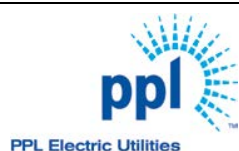
Workers should follow these procedures upon leaving the work area:

1. HEPA vacuum heavily contaminated protective work clothing while it is still being worn. At no time may lead be removed from protective clothing by any means which result in uncontrolled dispersal of lead into the air;
2. Remove shoe covers and leave them in the work area;
3. Remove protective clothing (Tyvek) and gear in the dirty area of the designated changing area. Remove protective coveralls by carefully rolling down the garment to reduce exposure to dust.
4. Remove respirators last, and
5. Wash hands and face.

Workers should follow these procedures upon finishing work for the day (in addition to procedures described above):

1. Where applicable, place disposal coveralls (Tyvek) and shoe covers with the abatement waste;
2. Contaminated clothing which is to be cleaned, laundered, or disposed of, must be placed in closed containers in the change room.
3. Clean protective gear, including respirators, according to standard procedures;
4. Wash hands and face again. If showers are available, take a shower and wash hair. If shower facilities are not available at the work site, shower immediately at home and wash hair.





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VI. Housekeeping - Paragraph (H)

Your employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. Vacuuming is the preferred method of meeting this requirement, and the use of compressed air to clean floors and other surfaces is generally prohibited unless removal with compressed air is done in conjunction with ventilation systems designed to contain dispersal of the lead dust. Dry or wet sweeping, shoveling, or brushing may not be used except where vacuuming or other equally effective methods have been tried and do not work. Vacuums must be used equipped with a special filter called a high-efficiency particulate air (HEPA) filter and emptied in such a manner which minimizes the reentry of lead into the workplace.

VII. Hygiene Facilities and Practices - Paragraph (I)

The standard requires that hand washing facilities are provided where occupational exposure to lead occurs. In addition, change areas, showers (where feasible), and lunchrooms or eating areas are to be made available to workers exposed to lead above the PEL. Your employer must assure that except in these facilities, food and beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, where airborne exposures are above the PEL. Change rooms provided by your employer must be equipped with separate storage facilities for your protective clothing and equipment and street clothes to avoid cross-contamination. After showering, no required protective clothing or equipment worn during the shift may be worn home. It is important that contaminated clothing or equipment be removed in change areas and not be worn home or you will extend your exposure to your family since lead from your clothing can accumulate in your house, car, etc.

Lunchrooms or eating areas may not be entered with protective clothing or equipment unless surface dust has been removed by vacuuming, downdraft booth, or other cleaning method. Finally, workers exposed above the PEL must wash both their hands and faces prior to eating, drinking, smoking or applying cosmetics.

All of the facilities and hygiene practices just discussed are essential to minimize additional sources of lead absorption from inhalation or ingestion of lead that may accumulate on you, your clothes, or your possessions. Strict compliance with these provisions can virtually eliminate several sources of lead exposure which significantly contribute to excessive lead absorption.



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**VIII. Medical Surveillance - Paragraph (J)**

The medical surveillance program is part of the standard's comprehensive approach to the prevention of lead-related disease. Its purpose is to supplement the main thrust of the standard which is aimed at minimizing airborne concentrations of lead and sources of ingestion. Only medical surveillance can determine if the other provisions of the standard have effectively protected you as an individual. Compliance with the standard's provision will protect most workers from adverse effects of lead exposure, but may not be satisfactory to protect individual workers (1) who have high body burdens of lead acquired over past years, (2) who have additional uncontrolled sources of non-occupational lead exposure, (3) who exhibit unusual variations in lead absorption rates, or (4) who have specific non-work related medical conditions which could be aggravated by lead exposure (e.g., renal disease, anemia). In addition, control systems may fail, or hygiene and respirator programs may be inadequate. Periodic medical surveillance of individual workers will help detect those failures. Medical surveillance will also be important to protect your reproductive ability - regardless of whether you are a man or a woman.

All medical surveillance required by the interim final standard must be performed by or under the supervision of a licensed physician. The employer must provide required medical surveillance without cost to employees and at a reasonable time and place. The standard's medical surveillance program has two parts -- periodic biological monitoring and medical examinations. Your employer's obligation to offer you medical surveillance is triggered by the results of the air monitoring program. Full medical surveillance must be made available to all employees who are or may be exposed to lead in excess of the action level for more than 30 days a year and whose blood level exceeds 40 ug/dl. Initial medical surveillance consisting of blood sampling and analysis for lead and zinc protoporphyrin must be provided to all employees exposed at any time (1 day) above the action level.

Biological monitoring under the standard must be provided at least every two months for the first six months and every six months thereafter until your blood lead level is below 40 ug/dl. A zinc protoporphyrin (ZPP) test is a very useful blood test which measures an adverse metabolic effect of lead on your body and is therefore an indicator of lead toxicity.

If your BLL exceeds 40 ug/dl the monitoring frequency must be increased from every six months to at least every two months and not reduce until two consecutive BLLs indicate a blood lead level below 40 ug/dl. Each time your BLL is determined to be over 40 ug/dl, your employer must be notify you of this in writing within five working days of his or her receipt of the test results. The employer must also inform you that the standard requires temporary medical removal with economic protection when your BLL exceeds 50 ug/dl. (See Discussion of Medical Removal Protection - Paragraph (k).) Anytime your BLL exceeds 50 ug/dl your employer must make available to you within two weeks of receipt of these test results a second follow-up BLL test to confirm your BLL. If the two Tests both exceed 50 ug/dl, and you are temporarily removed, then your employer must make successive BLL tests available to you on a monthly basis during the period of your removal.



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Medical examinations beyond the initial one must be made available on an annual basis if your blood lead level exceed 40 ug/dl at any time during the preceding year and you are being exposed above the airborne action level of 30 ug/m (3) for 30 or more days per year. The initial examination will provide information to establish a baseline to which subsequent data can be compared.

An initial medical examination to consist of blood sampling and analysis for lead and zinc protoporphyrin must also be made available (prior to assignment) for each employee being assigned for the first time to an area where the airborne concentration of lead equals or exceeds the action level at any time. In addition, a medical examination or consultation must be made as soon as possible if you notify your employer that you are experiencing signs or symptoms commonly associated with lead poisoning or that you have difficulty breathing while wearing a respirator or during a respirator fir test. You must also be provided a medical examination or consultation if you notify your employer that you desire medical advice concerning the effects of current or past exposure to lead on your ability to procreate a healthy child.

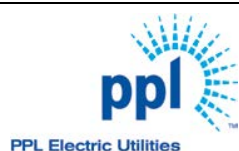
Finally, appropriate follow-up medical examinations or consultations may be provided for employees who have been temporarily removed from exposure under the medical removal protection provisions of the standard. (See Part IX, below.)

The standard specifies the minimum content of other types of medical examination and consultations is left up to the sound discretion of the examining physician. Pre-assignment and annual medical examinations must include (1) a detailed work history and medical history; (2) a thorough physical examination, including an evaluation of your pulmonary status if you will be required to use a respirator; (3) a blood pressure measurement; and (4) a series of laboratory tests designed to check your blood chemistry and your kidney function. In addition, at any time upon your request, a laboratory evaluation of male fertility will be made (microscope examination of a sperm sample), or a pregnancy test will be given.

The standard does not require that you participate in any of the medical procedures, tests, etc. which your employer is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encourages, therefore, to participate in a meaningful fashion. The standard contains a multiple physician review mechanism which will give you a chance to have a physician of your choice directly participate in the medical surveillance program. If you are dissatisfied with an examination by a physician chosen by your employer, you can select a second physician to conduct an independent analysis. The two doctors would attempt to resolve any differences of opinion, and select a third physician to resolve any firm dispute. Generally your employer will choose the physician who conducts medical surveillance under the lead standard - unless you and your employer can agree on the choice of a physician or physicians. Some companies and unions have agreed in advance, for example, to use certain independent medical laboratories or panels of physicians. Any of these arrangements are acceptable so long as required medical surveillance is made available to workers.

The standard requires your employer to provide certain information to a physician to aid in his or her examination of you. This information includes (1) the standard and its appendices, (2) a description of your duties as they relate to occupational lead exposure,





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(3) your exposure level or anticipated exposure level, (4) a description of any personal protective equipment you wear, (5) prior blood lead level results, and (6) prior written medical opinions concerning you that the employer has. After a medical examination or consultation the physician must prepare a written report which must contain (1) the physician's opinion as to whether you have any medical condition which places you at increased risk of material impairment to health from exposure to lead, (2) any recommended special protective measures to be provided to you, (3) any blood lead level determinations, and (4) any recommended limitation on your use of respirators. This last element must include a determination of whether you can wear a powered air purifying respirator (PAPR) if you are found unable to wear a negative pressure respirator.

The medical surveillance program of the interim lead standard may at some point in time serve to notify certain workers that they have acquired a disease or other adverse medical condition as a result of occupational lead exposure. If this is true, these workers might have legal rights to compensation from public agencies, their employers, or other persons. Some states have laws, including worker compensation laws that disallow a worker who learns of a job - related health impairment to sue, unless the worker sues within a short period of time after learning of the impairment. (This period of time may be a matter of months or years.) An attorney can be consulted about these possibilities. It should be stressed that OSHA is in no way trying to either encourage or discourage claims or lawsuits. However, since results of the standard's medical surveillance program can significantly affect the legal remedies of a worker who has acquired a job-related disease or impairment, it is proper for OSHA to make you aware of this.

The medical surveillance section of the standard also contains provisions dealing with chelation. Chelation is the use of certain drugs (administered in pill form or injected into the body) to reduce the amount of lead absorbed in body tissues. Experience accumulated by the medical and scientific communities has largely confirmed the effectiveness of this type of therapy for the treatment of very severe lead poisoning. On the other hand, it has also been established that there can be a long list of extremely harmful side effects associated with the use of chelating agents. The medical community has balanced the advantages and disadvantages and disadvantages resulting from the use of chelating agents in various circumstances and has established when the use of these agents is acceptable. The standard includes these accepted limitations due to a history of abuse of chelation therapy by some lead companies. The most widely used chelating agents are:

calcium disodium EDTA. (Ca Na<sub>2</sub> EDTA), Calcium Disodium Versenate (Versenate), and d-penicillamine (penicillamine or Cupramine).

The standard prohibits "prophylactic chelation" of an employee by any person the employer retains, supervises or controls. "Prophylactic chelation" is the routine use of chelating or similarly acting drugs to prevent elevated blood levels in workers who are occupationally exposed to lead, or the use of these drugs to routinely lower blood lead levels to pre-designated concentrations believed to be "safe". It should be emphasized that there where an employer takes a worker who has no symptoms of lead poisoning and has chelation carries out by a physician (either inside or outside of a hospital) solely to reduce the worker's blood lead level, that will generally be considered prophylactic chelation. The use of a hospital and a physician does not mean that prophylactic



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chelation is not being performed. Routine chelation to prevent increased or reduce current blood lead levels is unacceptable whatever the setting.

The standard allows the use of “therapeutic” or “diagnostic” chelation if administered under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. Therapeutic chelation responds to severe lead poisoning where there are marked symptoms. Diagnostic chelation involved giving a patient a dose of the drug then collecting all urine excreted for some period of time as an aid to the diagnosis of lead poisoning.

In cases where the examining physician determines that chelation is appropriate, you must be notified in writing of this fact before such treatment. This will inform you of a potentially harmful treatment, and allow you to obtain a second opinion.

**IX. Medical Removal Protection**

Excessive lead absorption subjects you to increased risk of disease. Medical removal protection (MRP) is a means of protecting you when, for whatever reasons, other methods, such as engineering controls, work practices and respirators, have failed to provide the protection you needs, MRP involves the temporary removal of a worker from his her regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other employment rights or benefits. The purpose of this program is to cease further lead absorption and allow your body to naturally excrete lead which has previously been absorbed. Temporary medical removal can result from an elevated blood lead lever, or a medical opinion. For up to 18 months, or for as long as the job the employee are removed from lasts, protection is provided as a result of either for m or removal. The vast majority of removed workers, however, will return to their former jobs long before this eighteen month period expires.

You may also be removed from exposure even if your blood lead level is below 50 ug/dl if a final medical determination indicates that you temporarily need reduced lead exposure for medical reasons. If the physician who is implementing your employer’s medical program makes a final written opinion recommending your removal or other special protective measures, your employer medical program makes a final written opinion recommending your removal or other special protective measurers, your employer must implement the physician’s recommendation. If you are removed in this manner, you may only be returned when the doctor indicates that it is safe for you to do so.

The standard does not give specific instruction dealing with what an employer must do with a removed worker. Your job assignment upon removal is amateur for you, your employer and your union (if any) to work out consistent with existing procedures for job assignments. Each removal must be accomplished in a manner consistent with existing collective bargaining relationships. Your employer is give broad discretion to implement temporary removals so long as no attempt is made to override existing agreements. Similarly, a removed worker is provided no right to veto an employer’s choice which satisfies the standard.



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In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. Alternatively, a worker's hours may be reduced so that the time weighted average exposure is reduced, or he or she may be temporarily laid off if no other alternative is feasible.

In all of these situations, MRP benefits must be provided during the period of removal - i.e., you continue to receive the same earnings, seniority and other rights and benefits you would have had if you had not been removed. Earnings includes more than just your base wage; it includes overtime, shift differentials, incentive and other compensation you would have earned if you had not been removed. During the period of removal you must also be provided with appropriate follow-up medical surveillance. If you were removed because your blood lead level was too high, you must be provided with a monthly blood test. If a medical opinion caused your removal, you must be provided medical tests or examinations that the doctor believes to be appropriate. If you do not participate in this follow up medical surveillance, you may lose your eligibility for MRP benefits.

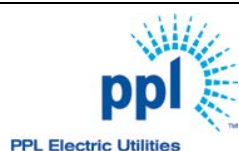
When you are medically eligible to return to your former job, your employer must return you to your "former" job status. This means that you are entitled to the position, wages, benefits, etc. you would have had if you had not been removed. If you would still be in your old job if no removal had occurred that is where you go back. If not, you are returned consistent with whatever job assignment, at the discretion of your employer, you would have had if the removal had not occurred. MRP only seeks to maintain your rights, not expand them or diminish them.

If you are removed under MRP and you are also eligible for worker compensation or other compensation for lost wages, your employer's MRP benefits obligation is reduced by the amount that you actually receive from these other sources. This is also true if you obtain other employment during the time you are laid off with MRP benefits.

The standard also covers situations where an employer voluntarily removes a worker from exposure to lead due to the effects of lead on the employee's medical condition, even though the standard does not require removal. In these situations MRP benefits must still be provided as though the standard required removal. Finally, it is important to note that in all cases where removal is required, respirators cannot be used as a substitute. Respirators may be used before removal becomes necessary, but not as an alternative to a transfer to a low exposure job, or to a lay-off with MRP benefits.

**X. Employee information and Training - Paragraph (L)**

Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead compounds such as lead arsenate or lead azide. The program must train these employees regarding the specific hazards associated with their work environment, protective measures which can be taken, including the contents of any compliance plan in effect, the danger of lead to their bodies (including their reproductive systems, and their rights under the standard. All employees must be trained prior to initial assignment to areas where there is a possibility of exposure over the action level.



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This training program must also be provided at least annually thereafter unless further exposure above the action level will not occur.

**XI. Signs - Paragraph (M)**

The standard requires that the following warning sign be posted in work areas where the exposure to lead exceeds the PEL:

**WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING**

These signs are to be posted and maintained in a manner which assures that the legend is readily visible.

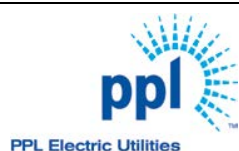
**XII. Recordkeeping - Paragraph (N)**

Your employer is required to keep all records of exposure monitoring for airborne lead. These records must include the name and job classification of employees measured, details of the sampling, and the type of analytical techniques, the results of this sampling, and the type of respiratory protection being worn by the person sampled. Such records are to be retained for as least 30 years. Your employer is also required to keep all records of biological monitoring and medical examination results. These records must include the names of the employee, the physician's written opinion, and a copy of the results of the examination. Medical records must be preserved and maintained for the duration of employment plus 30 years. However, if the employee's duration of employment is less than one year, the employer need not retain that employee's medical records beyond the period of employment if they are provided to the employee upon termination of employment.

Recordkeeping is also required if you are temporarily removed from your job under the medical removal protection program. This record must include your name and social security number, the date of your removal and return, how the removal was or is being accomplished, and whether or not the reason for the removal was an elevated blood test level. Your employer is required to keep each medical removal record only for as long as the duration of an employee's employment.

**XIII. Observation of monitoring - Paragraph (O)**

When air monitoring for lead is performed at your workplace as required by this standard, your employer must allow you or someone you designate to act as an observer of the monitoring. Observers are entitled to an explanation of the measurement procedure, and to record the results obtained. Since results will not normally be available at the time of the monitoring, observers are entitled to record or receive the results of the monitoring when returned by the laboratory. Your employer is



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required to provide the observer with any personal protective devices required to be worn by employees working in the area that is being monitored. The employer must require the observer to wear all such equipment and to comply with all other applicable safety and health procedures.

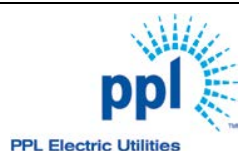
**XIV. Effective Date - Paragraph (P)**

The standards effective date is June 3, 1993. Employer obligations under the standard begin as of that date with full implementation of engineering controls as soon as possible but not later than within 4 months, and all other provisions completed as seen as possible, but no later than within two months from the effective date.

**XV. For Additional Information**

- A. A copy of the interim standard for lead in construction can be obtained free of charge by calling or writing the OSHA office of Publications, room N-3101, United States Department of Labor, Washington DC 20210: Telephone (202)219-4667
- B. Additional information about the standard, its enforcement, and your employer's compliance can be obtained from the nearest OSHA Area Office list in your telephone directory under United States Government/Department of Labor.

(57 FR 26627, May 4, 1993, as amended at 58 FR 34218, June 24, 1993)



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LEAD**

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**ATTACHMENT C – REGULATED AREA TERMINATION FORM**

To: \_\_\_\_\_ Date: \_\_\_\_\_

Regulated Area to be Terminated

\_\_\_\_\_  
Location  
\_\_\_\_\_

I have visually inspected the above referenced Regulated Area and have determined that the area has been cleaned as free as practicable of accumulation of \_\_\_\_\_. This area is no longer considered a Regulated Area.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Copy: \_\_\_\_\_  
(Job Supervisor, as required)



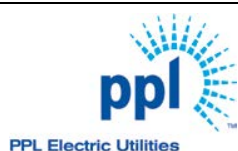
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**HEARING CONSERVATION**

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## **1.0 PURPOSE/SCOPE**

- 1.1 An effective hearing conservation program must be in place whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 decibels measured on the A-scale or equivalently a dose of fifty percent.
- 1.2 When monitoring results indicate employees are exposed at or above the 8-hour time-weighted average of 85 decibels, the employer shall notify each employee and an audiometric testing program (Hearing Conservation Program) shall be established and maintained.

## **2.0 RESPONSIBILITY**

- 2.1 All of the following responsibilities need to be met **ONLY** if noise test results indicate the need for employees to participate in a Hearing Conservation Program:
- 2.2 Pre-testing responsibilities:
  - 2.2.1 The business line will work with Health Services to –
    - a. Determine which employees are required to be in the Hearing Conservation Program.
    - b. Select the best location for setting up hearing tests (e.g., van placement), and conduct a pre-test of the equipment to ensure it is working properly.
  - 2.2.2 Safety Operations pre-plans schedule for conducting audiograms, if needed.
    - a. Provide employee sign-in sheets that will include employee's name and their PPL identification number. Social security numbers will not be used.
  - 2.2.3 Safety Operations works with Health Services to provide testing
    - a. Ensure each employee completes a history questionnaire and provide copies back to Health Services.
    - b. Provide copies of audiograms/fit testing and training to Health Services for inclusion into the medical files.
    - c. Provide a signed copy of the test results back to the employee upon completion of test.
    - d. Send out requests to schedule a second audiogram.
    - e. Conduct second audiograms and relay to health services the need for physician review based on confirmed STS (Standard Threshold Shift).





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2.3 Post-testing responsibilities:

- 2.3.1 Provide final reports to Safety Operations with all employee audiograms for archiving.

2.4 Safety Operations Responsibilities

Once determination is made that employees must be in the Hearing Conservation Program (refer to Attachment A-decision logic):

- 2.4.1 Work with field managers on scheduling and setup for audiograms with the testing contractor. Provide extended work history questionnaire to employees prior to their appointment with the audiologist, if necessary.
- 2.4.2 Receive notification of second audiograms needed for employees to determine if a shift has occurred and work with the steno clerk to reschedule the van.
- 2.4.3 Maintain all records and paperwork associated with the Hearing Conservation Program including, but not limited to, annual hearing tests, results, audiologist and physician reviews.
- 2.4.4 Maintain the OSHA log for any STS that have occurred and are confirmed on second test, and provide reasoning for exclusion off the log by filling out Attachment B (Reasons for Determining Non-OSHA Recordable).
- 2.4.5 Notify employee's supervisor, in writing, when a STS is confirmed. If needed, work with Safety .Operations
  - a. Fill out Attachment B (Hearing Conservation Notification Letter).
  - b. Work with steno clerk to schedule an appointment with the physician or audiologist.
- 2.4.6 Inform employee of confirmed work-related STS. Fill out Attachment E (Employee Notification Work-related Memo).
- 2.4.7 Maintain information in CCATS, and follow-up on status.
- 2.4.8 If medical evaluation discloses work-related noise exposure did not significantly contribute to the 10 dBA STS, be sure to take the following steps:
  - a. Revise the Injury/Illness Consequence in CCATS by changing:
    - Severity: to Non-Recordable.
    - Reporting: to show line-off (meaning, it will show on the OSHA log, but it will be lined off).



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- b. Inform the employee and his/her supervisor of this decision. Fill out Attachment E (Employee Notification Not Work-related Memo).
- c. Recommend follow-up with their personal physician.
- d. Maintain documentation for a minimum of five years.

**2.5 Management**

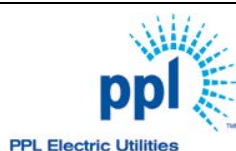
- 2.5.1 Work with a safety professional and steno clerks to ensure an annual audiogram is conducted for all employees in the Hearing Conservation Program. Steno clerks are assigned to schedule employees.
- 2.5.2 Evaluate and implement, if feasible, engineering controls that will reduce noise levels in the workplace.
- 2.5.3 Ensure all employees in the Hearing Conservation Program receive proper training.
- 2.5.4 Ensure everyone follows the rules to wear hearing protection in areas that are posted. Monitor to ensure they are worn properly.
- 2.5.5 Provide counseling to employees that do not wear hearing protection in posted areas and communicate outcomes to upper management.

**2.6 Employee**

- 2.6.1 Participate in the Hearing Conservation Program if the workplace is considered to be a hazardous noise area.
- 2.6.2 Don appropriate hearing protection when entering an area marked "Hearing Protection Required".
- 2.6.3 Maintain, in good condition, hearing protection while working in hazardous areas.

**2.7 Health Services Department**

- 2.7.1 File paperwork received from the audiologist, and testing contractor, in employee's medical file.
- 2.7.2 Provide feedback to the employee regarding any medical condition that may have been diagnosed as a result of the STS. If a STS is deemed not work related, it could be due to other medical reasons. Health Services will be able to provide further guidance and suggest employee visits with their family physician.
- 2.7.3 Manage all medical bills and payments for audiologist visits.



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### 3.0 APPLICABILITY

- 3.1 This procedure implements a Hearing Conservation Program to protect employees against hearing loss.

### 4.0 TERMS AND DEFINITIONS

- 4.1 **Action Level (AL)** – a noise exposure of over 85 dBA time-weighted average for 8 hours. Employee exposures above this level require that those employees be placed in a hearing conservation program.
- 4.2 **Annually** – means audiograms are obtained in the same month (or earlier) year to year; e.g. January 2006, January 2007, January 2008.
- 4.3 **Audiogram** – means a method of recording an individual's sensitivity to sound by showing hearing threshold levels as a function of sound frequency measured in Hertz. This testing shows the amount of hearing loss at specific frequencies.
- 4.4 **dBA/dBC** – decibel (dB) means a unit for measuring how loud a sound makes – it is a measurement of sound pressure. When referring to dBA, sound level readings are in decibels made on the A-weighted or B-weighted network of a sound level meter. OSHA requires measurement in dBA for compliance purposes. Measurements on dBC are used to assess the effectiveness of hearing protective devices (HPD).
- 4.5 **Feasible** – The Supreme Court has held that the term "feasible" as used in the standard-setting provision of the Occupational Safety and Health Act means "capable of being done." OSHA interprets the term "feasible" in its ordinary meaning of "capable of being done."
- 4.6 **Hazardous Noise Area** – an area where noise exposure may equal or exceed 85 dBA in an 8-hour TWA.
- 4.7 **Hearing Conservation Program (HCP)** – a program consisting of noise exposure evaluation, the provision of hearing protection, hearing (audiometric) testing, training and noise control..
- 4.8 **High Noise Area** – are areas where measured noise levels exceed 100 dBA. These areas are posted throughout any work area that has been evaluated.
- 4.9 **Noisy Areas** – areas where employees have difficulty communicating at a distance of approximately 3 feet. The noise levels in these areas are usually at or above 85 dBA.



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- 4.10 **PEL (Permissible Exposure Limit)** – is an exposure limit established by OSHA's regulatory authority. Permissible exposure limits may be a time weighted average (TWA) limit or a maximum concentration exposure limit.
- 4.11 **STS (Standard Thresholds Shift)** – is an average shift from the baseline of 10 dBA or more in the audiometric frequencies of 2,000, 3,000 and 4,000 hertz.
- 4.12 **TTS (Temporary Threshold Shift)** – is hearing loss from noise that is temporary at first. During the course of a noisy day, the ear becomes fatigued and the workers experience a reduction in hearing. Between the end of the work shift (if no further exposure to loud noise occurs) and the beginning of the next shift the ear usually recovers from much of TTS. With continued long-term exposures, the TTS becomes permanent.

## **5.0 MAIN BODY**

### **5.1 Monitoring Procedure**

- 5.1.1 Surveys of equipment will be conducted by Safety Operations or designated individuals.
- 5.1.2 A comprehensive survey of building locations must be conducted every three years, in all noisy areas. Record all measurements 80 dBA or higher on a floor plan, charts, or other survey devices which will allow for duplicate future follow-up surveys. For all measurements of 90 dBA and higher, record dBC levels. Send copy of results to Safety Operations.
- 5.1.3 Representative monitoring of hand-held tools and equipment, as well as mobile equipment (compressors, tractors and trucks, excluding passenger cars) must be conducted as needed. These measurements must be taken at the operator's exposure location under conditions comparable to regular use of that equipment.
- 5.1.4 Record all measurements 80 dBA and higher. For all measurements 90 dBA and higher, record dBC levels. Send copy of results to Safety Operations.
- 5.1.5 noise monitoring is required whenever there is significant change in production, process, equipment or controls that may result in increased noise exposure according to 1910.95 d(3).
- 5.1.6 Measurements must be taken with an ANSI Type II meter (or better) on the A scale slow and C scale slow in those areas greater than 90 dBA. (C scale measurements are used to assess the effectiveness of hearing protectors.) Records must indicate the instrument type, its serial number, calibrator type and serial number, date of measurement, date/time of calibrations before and after measurements, person performing measurements and other pertinent information, as appropriate.



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5.2 Personal Audiodosimetry

- 5.2.1 Periodic full shift (approximately seven hours or more for eight-hour shift, eleven hours or more for twelve-hour shift) personal audiodosimetry should be conducted on a representative number (random selection preferred) of all employees who receive an annual audiogram.
- 5.2.2 Representative personal audiodosimetry should be conducted on personnel not included on the annual audiogram program but whose jobs or job classes have demonstrated daily exposures of greater than 25%.
- 5.2.3 Audiodosimetry must be conducted with instruments, which are checked for calibration before and after each test. Document calibration checks. Use the following settings:
  - a) 5 dB Exchange Rate
  - b) 8 Hour at 85 dBA = 50%
  - c) Lower Cutoff 80 dB
- 5.2.4 Notify individual employees sampled by audiodosimetry of the results of monitoring per Corporate Safety & Health Monitoring Guidelines.

5.3 Use of Engineering Controls

- 5.3.1 Whenever feasible, as described by OSHA above, evaluation of engineering controls to reduce noise levels determined to be at or above the 90 dB OSHA limit, will be implemented by the respective facility.
- 5.3.2 EHS will be responsible for conducting noise level measurements to determine areas of high noise levels. This information will be provided to business line management for consideration.
- 5.3.3 Management will be responsible for evaluating potential controls for consideration and implementation.

5.4 Noise Area Posting/Hearing Protection

- 5.4.1 Signs must be conspicuously posted at all entrances to noisy areas.
- 5.4.2 The use of hearing protectors is required in all posted work areas and at all posted machine operator positions, which have noise levels in excess of 85 dBA.
- 5.4.3 Employees must be given the opportunity to select their hearing protectors from a variety of company-issued hearing protectors. All personal hearing protectors available in the Approved Tool & Equipment manual must be available to employees, unless operating conditions would preclude their use. (E.g. critical work location may require that only corded hearing



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protectors be used in order to avoid irretrievable loss of a plug into the work zone.)

- 5.4.4 Noise levels greater than 100 dBA pose higher than normal concern, and must be posted as:

**HIGH NOISE AREA**  
**DOUBLE HEARING PROTECTION**  
(Plugs and Muffs)  
**REQUIRED**  
**WHEN WORKING IN THIS AREA**

- 5.4.5 High noise area signs must be placed at the approximate perimeter of the 100 dBA high noise area.

- 5.4.6 "When working in this area" does not apply to brief equipment checks, or walking through the area.

5.5 Training

- 5.5.1 Refer to Section 8 in this procedure.

5.6 Audiometric Testing and Evaluation

- 5.6.1 Health Services generates a list of employees in the Hearing Conservation Program. Follow the PPL Hearing Conservation Program Flowchart (Attachment A).

- 5.6.2 Audiometric testing must be conducted annually on all employees included in the HCP. Options for Audiometric Testing: (The annual audiogram will be conducted by an outside contractor)

- a. Option 1: Use the outside contractor as a mobile van service. If this option is chosen, then the following will apply:
- Employees that will be scheduled for the van service will have six months for a retest if a shift has occurred. Health Services in conjunction with the plant representative will be responsible for ensuring these employees are rescheduled with the mobile van service within this time frame.



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- b. Option 2: Use the outside contractor as a stationary testing service. If this option is chosen then the following will apply:
- Employees that will be scheduled to go to the office for an audiogram will only have 30 days for a retest if a shift has occurred. Health Services in conjunction with the plant representative will be responsible for ensuring these employees are rescheduled with the office service within this time frame.
- 5.6.3 Employees who are being scheduled for the initial audiogram must be told to avoid exposure to noise for at least 16 hours prior to the exam. This can be accomplished by having the employee work at quiet tasks until the audiometric test is performed, or by requiring the employee to use hearing protectors (muffs or plugs) until the hearing test. In addition, noise must also be avoided prior to coming to work
- 5.6.4 Annual audiometric tests may be conducted at any time during the work shift.
- 5.6.5 At the end of each audiogram, employees should be fitted to determine the best fitting earplug for that individual.
- 5.7 Hearing Loss 10 dBA STS – OSHA Recordkeeping
- 5.7.1 If the annual audiogram results in a 10 dB age-corrected STS, the audiogram must be repeated in 30 days.
- 5.7.2 If a second audiogram is not conducted within 30 days of the first/annual audiogram, then follow the steps below:
- a) Complete a 'first report of incident' in CCATS within seven days of the annual audiogram (if the case meets OSHA recordable requirements). By selecting OSHA recordable, the OSHA 300 log will automatically generate.
  - b) Tell the employee, in writing, he/she has experienced a STS.
  - c) Re-fit the employee with hearing protection.
- 5.7.3 If the second audiogram demonstrates that a 10 dBA STS has not occurred, document the finding. If the case was placed on the OSHA Log, line out the case on the log and document reason it was lined out.
- 5.7.4 If the second audiogram is a 10 dB STS, follow step 11.2 above and log the case within seven days of the second confirmed STS. Advise Safety Operations and follow the business line's procedure to have employees seen by a physician or audiologist.





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5.7.5 If medical evaluation discloses work-related noise exposure did not significantly contribute to the 10 dBA STS, revise the CCATS entry and select in the personal injury consequence. Strikeout off the OSHA Log, and inform the employee of this decision and recommend follow-up with their personal physician. Maintain this documentation for a minimum of five years.

**5.8 Records Retention**

5.8.1 Noise exposure measurement records – when area noise exposure is determined using a sound level meter – are to be retained for two years.

5.8.2 Audiometric testing results (personal testing using an audiodosimeter) and notifications sent to the employee are to be stored in the employee's medical record file and must be retained throughout the employee's time of employment.

5.8.3 Retain the completed Attachment C (Reasons for Determining Non-OSHA Recordable) for a period of five years.

**6.0 REFERENCES – N/A**

**7.0 REGULATORY REQUIREMENTS**

7.1 [OSHA 29 CFR 1910.95](#) Occupational Noise Exposures

**8.0 TRAINING / SAFETY**

8.1 Annually, each employee who is exposed to noise at or above an 8-hour time weighted average of 85 decibels shall be trained. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.


[MST330 - Hearing Protection CBT](#) includes:

- 8.1.1 Educating employee on the effects of noise and how it impacts hearing
- 8.1.2 The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and
- 8.1.3 The purpose of audiometric testing, and an explanation of the test procedures.
- 8.1.4 Access to information and training materials

8.2 Provide training on proper fitting of ear plugs on an as-needed basis, ensure the –

8.2.1 Training is documented.



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8.2.2 Send a copy of the training documentation to Health Services for employee's medical file.

8.3 Training log/records must be maintained for at least three years.

## 9.0 COMPLIANCE AND EXCEPTIONS - N/A

## 10.0 ATTACHMENTS

10.1 Attachment A - Hearing Conservation Program Decision Logic

10.2 Attachment B - Hearing Conservation Notification Letter

10.3 Attachment C - Reason's for Determining Non-OSHA Recordability

10.4 Attachment D - Employee Notification Not Work-related Memo

10.5 Attachment E - Employee Notification Work-related Memo

## 11.0 RECORD RETENTION

11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

11.2 This document shall be reviewed every 5 years by Safety Operations.

11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	5/23/2017	Effective	05/25/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One-Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Health Services, Denise Nika – Occupational Nurse. Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Converted links to the new SharePoint.			



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<b>Rev</b>	00	<b>Date</b>	08/10/2012	<b>Effective</b>	08/10/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

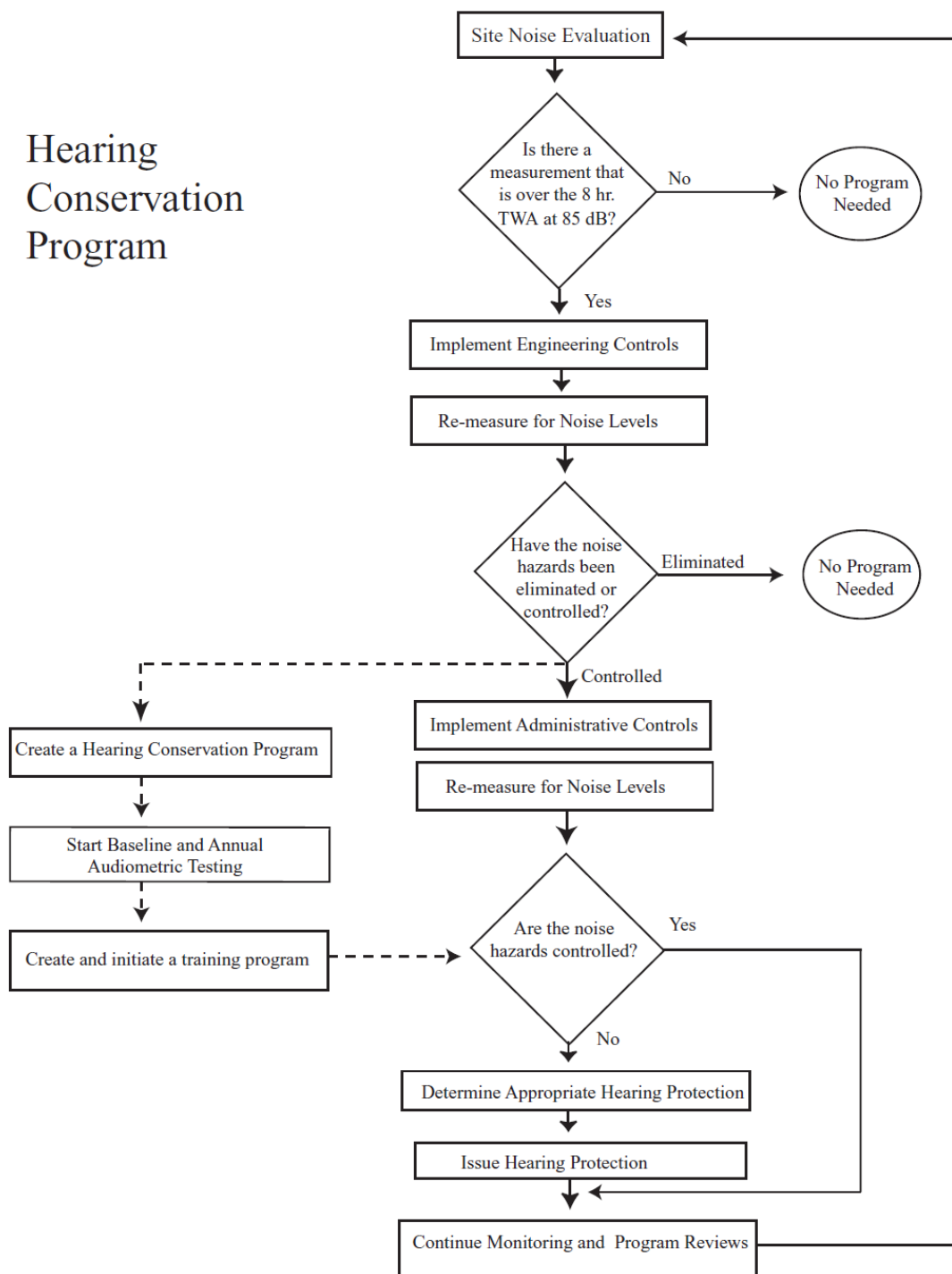


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**ATTACHMENT A – HEARING CONSERVATION PROGRAM DECISION LOGIC**

Hearing  
 Conservation  
 Program





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**ATTACHMENT B – HEARING CONSERVATION NOTIFICATION LETTER**

Date:

To: Employee's Name

As you know, the annual audiogram program serves to inform employees about the status of their hearing with respect to workplace noise exposures and to meet OSHA regulations.

While our annual audiograms are quality audiograms meeting stringent requirements, our audiologist, ENT Surgical Associates, can administer a hearing test with a higher degree of precision and personal attention. The doctor's review determines any medical-related issues and provides a determination on work-relatedness of the hearing loss.

In your case, Employee's Name, ENT Surgical Associates has confirmed that you do have a standard threshold shift in your left/right ear and that it is indeed work related. You will be placed on the OSHA log for work-related illnesses. **It is important from this point on that you continue to wear personal protective equipment such as ear plugs or ear muffs in order to prevent further hearing loss.**

If you have any questions about this letter, please feel free to contact me at .

Thank you.

Safety Operations

cc: Health Services



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**ATTACHMENT C - REASON(S) FOR DETERMINING NON-OSHA RECORDABILITY**

Today's Date

**Reason(s) for Determining Non-OSHA Recordability**

On \_\_\_\_\_,  
experienced \_\_\_\_\_  
(Date of Event) (Employee Name)

an injury/illness. Thorough data collection and investigative findings determined this case is not OSHA recordable due to the following reason(s):

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**CCATS #** \_\_\_\_\_

**WORKERS' COMPENSATION #:** \_\_\_\_\_

Information provided is based on all evidence brought before me:

**Signed:** \_\_\_\_\_  
Safety Professional

**Final Approval:** \_\_\_\_\_  
Manager – Safety Operations

Important note: After 'final approval', forward copy of signed form to originator (Safety & Health Representative) to serve as supporting documentation for lining out case on the OSHA 300 form.



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**ATTACHMENT D - NOT WORK RELATED MEMO**

Date:

To: Employee's Name

As you know, the annual audiogram program serves to inform employees about the status of their hearing with respect to workplace noise exposures and to meet OSHA regulations.

While our annual audiograms are quality audiograms meeting stringent requirements, our audiologist, ENT Surgical Associates, can administer a hearing test with a higher degree of precision and personal attention. The doctor's review determines any medical-related issues and provides a determination on work-relatedness of the hearing loss.

In your case, Employee's Name, ENT Surgical Associates has confirmed that you do have a standard threshold shift in your left/right ear and that it is not work related. You may want to consider follow-up with your personal physician, and continue to wear hearing protection to reduce any potential for further hearing loss.

If you have any questions about this letter, please feel free to contact me at .

Thank you.

Safety Operations

cc: Health Services



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**ATTACHMENT E - WORK RELATED MEMO**

Date:

To: Employee's Name

As you know, the annual audiogram program serves to inform employees about the status of their hearing with respect to workplace noise exposures and to meet OSHA regulations.

While our annual audiograms are quality audiograms meeting stringent requirements, our audiologist, ENT Surgical Associates, can administer a hearing test with a higher degree of precision and personal attention. The doctor's review determines any medical-related issues and provides a determination on work-relatedness of the hearing loss.

In your case, Employee's Name, ENT Surgical Associates has confirmed that you do have a standard threshold shift in your left/right ear and that it is indeed work related. You will be placed on the OSHA log for work-related illnesses. **It is important from this point on that you continue to wear personal protective equipment such as ear plugs or ear muffs in order to prevent further hearing loss.**

If you have any questions about this letter, please feel free to contact me at .

Thank you.

Safety Operations

cc: Health Services



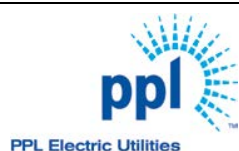
**SP 24  
 SAFETY PROCEDURE  
 ERGONOMICS**

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### 1.0 PURPOSE/SCOPE

- 1.1 Demonstrate management's commitment and leadership to identify, evaluate, and implement feasible controls to reduce ergonomic stresses within the workplace.
- 1.2 Comply with OSHA's General Duty Clause to keep PPL free from recognized serious hazards, including ergonomic hazards, by implementing an effective office ergonomic program to reduce ergonomic hazards and associated CTD (Cumulative Trauma Disorder).
- 1.3 Establish, in order, the following three response levels for ergonomic interventions:
  - 1) Supervisor observes and coaches employee;
  - 2) Occupational Athletic Trainer performs *undocumented* ergonomic observation;
  - 3) *Documented* third-party ergonomic assessments based on recommendations from Health Care Provider (HCP), or Health Services (resulting from ADA discussion, IME, etc.)

### 2.0 RESPONSIBILITY

- 2.1 Employees:
  - 2.1.1 Follow [SP 31 Incident Reporting & Analysis Process](#) for reporting work related injuries and illnesses.
  - 2.1.2 Immediately contact a supervisor when ergonomic stresses are experienced while performing work.
  - 2.1.3 Use proper body positioning when using tools and operating equipment. Be sure to always follow manufacturer's recommendations.
- 2.2 Supervisors:
  - 2.2.1 Participate in each of the three levels of ergonomic responses when an employee requests an ergonomic evaluation:



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- Level 1) Supervisor observes and coaches employee;
- Level 2) Occupational Athletic Trainer performs undocumented ergonomic observation;
- Level 3) Documented third-party ergonomic assessments based on recommendations from Health Care Provider (HCP) or Health Services (resulting from ADA discussion, IME, etc.)

2.2.2 Contact a representative from Safety Operations if you have questions regarding this procedure.

### 2.3 Safety Professionals:

2.3.1 Provide technical assistance, coach, and train (if needed) on ergonomic issues.

## 3.0 APPLICABILITY

3.1 This procedure is to identify, evaluate, and implement feasible controls to reduce ergonomic stresses within the workplace.

## 4.0 TERMS AND DEFINITIONS

- 4.1 **Cumulative Trauma Disorders (CTDs)** - are disorders of the muscles, tendons, peripheral nerves, vascular system, or other tissues. They can result from, be precipitated by, or be aggravated by intense, repeated, sustained or insufficient recovery from exertions, motions of the body, vibration, or cold.
- 4.2 **Ergonomics** - A multidisciplinary field addressing the interactions among humans, tasks and the total work environment.
- 4.3 **Health Care Provider (HCP)** - A health care practitioner operating within the scope of their license, registration, certification or legally authorized practice.
- 4.4 **Neutral body position** - This is a comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing CTD's.



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### **5.0 MAIN BODY**

#### **5.1 Level 1: Supervisor observes and coaches employee**

- 5.1.1 If unfamiliar with conducting ergonomic observations, supervisors are encouraged to contact an Occupational Athletic Trainer or Safety Professional for assistance.
- 5.1.2 Assist employee with maintaining a neutral body position. The following are important considerations when attempting to maintain neutral body postures while working at the computer workstation:
- Hands, wrists, and forearms are straight, in-line and roughly parallel to the floor.
  - Wrist rests should only be used for resting, not for support while typing. Additionally, fingers and wrist should float above keyboard to decrease risk of carpal tunnel.
  - Head is level or bent slightly forward, forward facing, and balanced. Generally it is in-line with the torso.
  - Shoulders are relaxed and upper arms hang normally at the side of the body.
  - Elbows stay in close to the body and are bent between 90 and 120 degrees.
  - Feet are fully supported by the floor or a footrest may be used if the desk height is not adjustable.
  - Back is fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
  - Thighs and hips are supported by a well-padded seat and generally parallel or slightly above knee height to the floor.
  - Knees are about the same height as the hips with the feet slightly forward.
- 5.1.3 The following four body posture changes all provide neutral positioning for the body: Upright sitting, standing, declined sitting, and reclined sitting



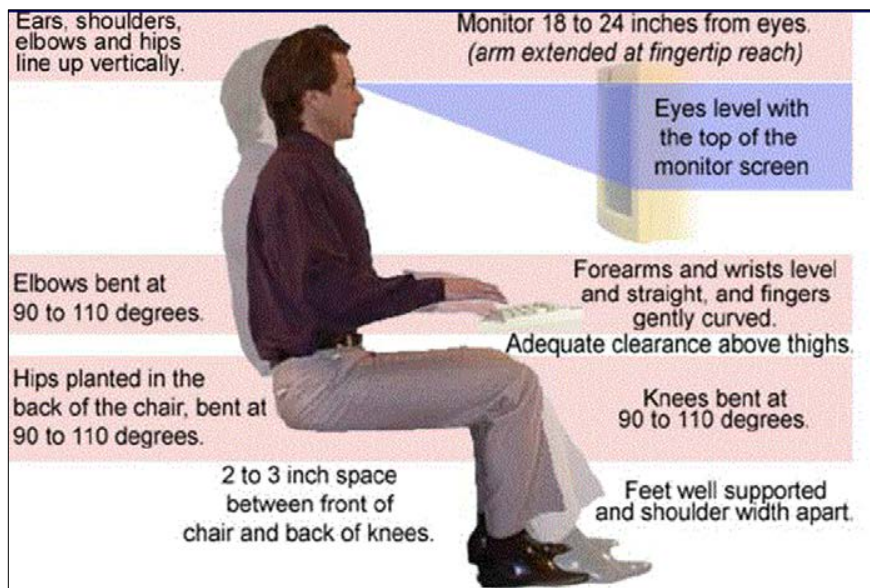
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### Sitting

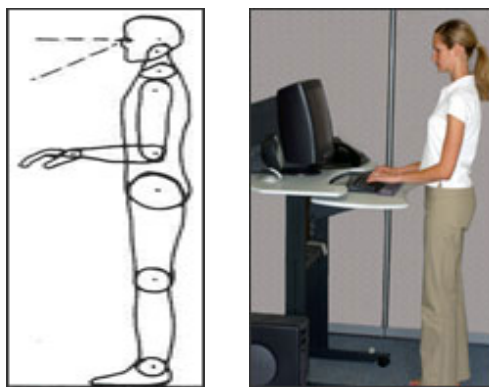
Employee's torso and neck are approximately vertical and in-line, the thighs are approximately horizontal, and the lower legs are vertical.

*Upright sitting – the person maintains a neutral body position.*

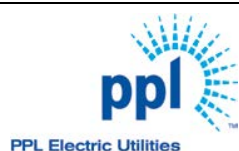


### Standing

Employee's legs, torso, neck, and head are approximately in-line and vertical. The user may also elevate one foot on a rest while in this posture.



*Standing Posture*  
*The person's entire body aligns vertically.*



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Encourage employee to change their working position frequently throughout the day in the following ways:

- Make small adjustments to your chair or backrest.
- Stretch your fingers, hands, arms, and torso.
- Stand up and walk around for a few minutes periodically.

5.1.4 Office supervisors may receive additional optional training by clicking on the ergonomic web links below:

[VIDEO - 9 Tips for a Healthy Ergonomics Workstation - Mayo Clinics](#)  
[OSHA Computer Workstation eTool](#)

5.1.5 If your ergonomic observation results in recommendations for chair or workstation accessory upgrades, you are encouraged to contact the Occupational Athletic Trainer or safety professional for a second opinion.

5.1.6 The business line is financial responsible for purchasing all furniture/equipment for their employees. Work with Facilities Management when changing placement or adjusting office equipment or furniture.

5.1.7 Ensure all recommended corrections are implemented and perform a follow up with employee to ensure they maintain a neutral position.

### 5.2 **Level 2: Occupational Athletic Trainer performs *undocumented* ergonomic observation**

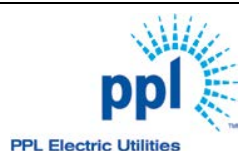
5.2.1 Occupational Athletic Trainers are certified and experienced in identifying ergonomic stressors for both office and non-office workers. They assist in recommending and implementing both engineering and administrative controls.

5.2.2 An Occupational Athletic Trainer is assigned a PPL business location. Click on the following link to obtain a schedule and contact information of the nearest OA trainer: [Occupational Athletic Trainer \(with Calendar\)](#)

5.2.3 Supervisors must participate in ergonomic assessments performed on their employees so that they may learn the process as well.

### 5.3 **Level 3: Documented third-party vendor ergonomic assessments based on recommendations**

5.3.1 An employee may have a recommendation from a Health Care Provider (HCP), or Health Services (resulting from ADA discussion, IME, etc.) to have a documented ergonomic evaluation performed at the employee's



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work area. Only during these circumstances PPL will recommend a third party vendor conduct ergonomic assessments.

NOTE: Examples of third party vendors may include Mid-States or OneSource. Only upon special request will an Occupational Athletics Trainer be asked to perform a documented ergonomic assessment.

- 5.3.2 The supervisor must contact their local safety professional for choosing a third party vendor.
- 5.3.3 Once the third-party vendor is chosen, the following steps shall be followed:
1. Visits must be arranged with the employee and immediate supervisor.
  2. Contact Health Services to let them know the day/time of the visit.
  3. Written "DRAFT" ergonomic assessment document must be reviewed by Safety Operations and employee's supervisor with feedback given to the third-party vendor.
  4. After documented assessment is finalized, copies of ergonomic evaluations are e-mailed to:
    - a. Employees supervisor/manager
    - b. Health Services
    - c. Safety Operations
  5. Information is entered into CCATS, along with the final document.
- 5.3.4 It is the responsibility of the employee's supervisor to ensure all ergonomic assessment recommendations are implemented. Costs associated with recommended ergonomic equipment/materials are the responsibility of the employee's business line.

## **6.0 REFERENCES**

- 6.1 [Occupational Certified Athletic Trainer FAQ, 2016](#)
- 6.2 [Occupational Safety Health Administration \(OSHA\) Ergonomic Solutions to Control Hazards \(computer workstation\), 2005](#)
- 6.3 [Mayo Clinic, Office Ergonomics](#), 2016

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA's General Duty Clause, Section 5(a)(1)



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### 8.0 TRAINING / SAFETY

- 8.1 [VIDEO - 9 Tips for a Healthy Ergonomics Workstation - Mayo Clinics](#)
- 8.2 [OSHA Computer Workstation eTool](#)

### 9.0 COMPLIANCE AND EXCEPTIONS - N/A

### 10.0 ATTACHMENTS – N/A

### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	02	Date	07/21/2017	Effective	07/21/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Pros: Brian Kostik, Jared Dyer, Steve Mondschein, Dalton Shorts, and Elizabeth McKay			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Repaired broken links to websites.			





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<b>Rev</b>	01	<b>Date</b>	9/01/2016	<b>Effective</b>	10/01/2016
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Pros: Brian Kostik, Jared Dyer, Steve Mondschein, Andrew Hoch, Elizabeth McKay; Occupational Health: Denise Nika and Janelle Keeney; Customer Contact Supervisors and Managers			
<b>Approved by:</b>		Brian Matweecha, Safety Manager			
<b>Revision Comments:</b>		Incorporated and explained the three new response levels of ergonomic interventions. Clarified roles / responsibilities of affected business groups, and included materials (web links) for supervisors to use for Level-1 ergonomic response.			

<b>Rev</b>	00	<b>Date</b>	08/10/2012	<b>Effective</b>	08/10/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





**SP 25  
SAFETY PROCEDURE  
INDOOR AIR QUALITY**

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### **1.0 PURPOSE/SCOPE**

- 1.1 Establish guidelines for the maintenance of indoor air quality (IAQ) in 'non-industrial' working environments at PPL Electric Utilities.
- 1.2 This procedure establishes the requirements for PPL Electric Utilities to maintain acceptable indoor air quality at all company controlled 'non-industrial' working environments to include offices, training facilities and other similar occupancies. To the extent feasible and appropriate, the procedures apply to rented office space.
- 1.3 Safe and healthy indoor environmental conditions exists in an environment where comfort parameters (relative humidity and temperature) are maintained within American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) guidelines and known contaminants do not exceed established levels as determined by recognized guidelines, ASHRAE and governmental agencies.
- 1.4 At the time of preparing this Safety Procedure, OSHA does not have an indoor air quality standard. OSHA published a proposed standard on April 5, 1994, (*1910.19 Special Provisions for Air Contaminants*) to apply to all non-industrial work environments; however, it has not been adopted. While not government regulation, The Environmental Protection Agency has published a document, which provides a comprehensive description of indoor air quality issues and recommends approaches to solve indoor air problems.

### **2.0 RESPONSIBILITY**

- 2.1 Department Management
  - 2.1.1 Provide employees a place of employment which is free from recognized hazards that cause or are likely to cause harm to the employees.
  - 2.1.2 Assure compliance with government standards and company guidelines.
  - 2.1.3 Refer employee's IAQ concerns/complaints to the location's Facilities Management IAQ Administrator.
- 2.2 Facilities Management IAQ Administrator is responsible to:
  - 2.2.1 Oversee the implementation and monitoring of IAQ efforts at each location.



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- 2.2.2 Interview employees and investigate employee complaints regarding IAQ concerns at a specific location.
- 2.2.3 Establish and coordinate a plan of action to correct verified IAQ problems at locations.
- 2.2.4 Maintain all IAQ associated records for the location, including a central file of indoor air quality and evaluation monitoring results, findings and response actions.
- 2.3 Safety Operations is responsible to:
  - 2.3.1 Assess industry and governmental standards for applicability at PPL.
  - 2.3.2 Work with Facilities Management to ensure compliance with this procedure.

### **3.0 APPLICABILITY**

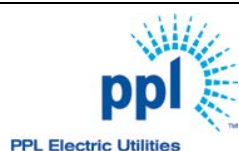
- 3.1 This procedure establishes the requirements to maintain acceptable indoor air quality at all company controlled 'non-industrial' working environments to include offices, training facilities and other similar occupancies

### **4.0 TERMS AND DEFINITIONS**

- 4.1 Indoor Air Quality — the introduction and distribution of adequate ventilation air, control of airborne contaminants, and the maintenance of acceptable temperature and relative humidity.
- 4.2 Airborne Contaminants — Odors, dusts, chemical or microbiological parameters that can affect the quality of air in a specific area.
- 4.3 Building — a structure having four (4) walls and a roof.

### **5.0 MAIN BODY**

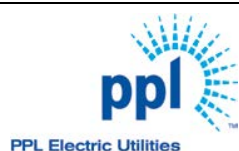
- 5.1 PROCEDURE
  - 5.1.1 PPL Indoor Air Quality Limits as per PPL Facilities Management.
  - 5.1.2 Maintain comfort levels (relative humidity and temperature) and indoor contaminant levels within ASHRAE and recognized guidelines and levels as determined by governmental or general industry standards.



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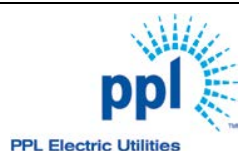
- 5.1.3 The current ASHRAE guideline for carbon dioxide (CO<sub>2</sub>) in indoor air is the outdoor air concentration of CO<sub>2</sub> in parts per million (ppm) plus 700 ppm.
- 5.1.4 The preventative maintenance program includes steps to assure that microbial contamination is controlled inside condenser coils and other components of heating, ventilation and air conditioning (HVAC) systems.
- 5.1.5 Safety Operations will work with Facilities Management Department to follow current scientific guidelines regarding microbial contamination/ amplification and will provide interpretation of microbiological monitoring activities.
- 5.2 Preventive Maintenance
  - 5.2.1 A written preventive maintenance program for HVAC systems shall be established at each location.
  - 5.2.2 The preventive maintenance program will consist of the following:
    - a. Filter type and replacement schedule.
    - b. Scheduled periodic system maintenance.
    - c. Periodic checks to assure cooling coils and catch basins are draining properly and that there is no microbial build-up.
    - d. Examination/inspection of ductwork conditions.
    - e. Appropriate janitorial services provided in and around HVAC systems.
    - f. Assessments of facility modifications and effects on HVAC systems.
- 5.3 Indoor Air Quality Concerns
  - 5.3.1 Employees with concerns are requested to contact their immediate supervisor who will contact their Safety Professional. Employee will be provided with Attachment A - Indoor Air Quality Concern/Complaint Form.
  - 5.3.2 The employee will complete the form and give it to his/her supervisor to forward to the IAQ Administrator at the facility.
  - 5.3.3 The Facilities Management IAQ Administrator is required to promptly discuss the issue with the complainant, in person if possible.



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- 5.3.4 The Facilities Management IAQ Administrator will complete the bottom of the form, Initial Interview Report, indicating the action(s), which are planned to be done in response to the complaint.
  - 5.3.5 Facilities Management IAQ Administrator will log the complaint. The log contains the date of the complaint, the employee name, and a brief description of the problem, a brief description of the plan to remedy the problem, and the date and final statement that the problem was addressed.
  - 5.3.6 Employees may be asked to maintain a log recording the occasions and times when they experience symptoms of discomfort that they believe may be linked to an environmental condition in their building. This diary will assist the IAQ Administrator in the evaluation to ascertain repetitions of subtle conditions, which may affect indoor air quality. (EXAMPLE: A complaint of fumes may be repeated every day at 10 AM when, unknown to the complainant, the UPS truck delivers the daily shipment. This could lead to a remedy, which asks the UPS driver to park away from the air intake, or to turn the engine off when making the delivery.)
- 5.4 Smoking
- 5.4.1 A smoking ban in PPL is in effect per agreement between PPL and the Bargaining Unit effective January 1, 1995. The smoking ban applies to **all** PPL leased and owned buildings.
  - 5.4.2 A smoking ban is applied in other areas based on the availability of conditioned or unconditioned air. Conditioned air exists where there is permanently installed heating, cooling or ventilating equipment; unconditioned air is without such permanently installed equipment.
    - a. Smoking is not permitted in indoor or enclosed conditioned workspaces such as offices, training facilities, and cafeterias and break rooms.
    - b. Smoking rules will be determined by consensus of the work group in enclosed, unconditioned workspaces.
  - 5.4.3 Smoking in PPL vehicles is allowed with the provision that no occupant objects.



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### **5.5 Auditing**

5.5.1 Safety Operations shall work with Facilities Management IAQ Administrator of each location upon receiving complaints within a building.

5.5.2 Facilities maintenance documentation will be reviewed during routine audit inspections by Safety Operations.

### **5.6 Records**

5.6.1 All IAQ forms, logs and other building maintenance documentation pertaining to indoor air quality shall be maintained by the Facilities Management IAQ Administrator.

## **6.0 REFERENCES**


- 6.1 Building Air Quality, US Environmental Protection Agency, ISBN 0-16-035919-8, 12/99.
- 6.2 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists.
- 6.3 ANSI/ASHRAE Standard 62.1-2013 Ventilation for Acceptable Indoor Air Quality
- 6.4 ANSI/ASHRAE Standard 55-2013 Thermal Environmental Conditions for Human Occupancy
- 6.5 Volatile Organic Compounds, Indoor Air Quality and Health, Proceedings of the 5<sup>th</sup> International Conference on Indoor Air Quality and Climate, Lars Molhave, Ph.D.; 1990.

## **7.0 REGULATORY REQUIREMENTS**

## **8.0 TRAINING / SAFETY**

8.1 PPL EU Safety Rule Book

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

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## 10.0 ATTACHMENTS

10.1 Attachment A - Indoor Air Quality Complaint and Initial Interview Form

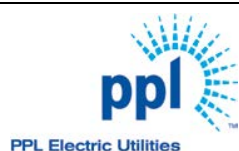
## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	07/06/2017	Effective	07/06/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Facilities Management Specialist, Dennis Horn; Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with ANSI/ASHRAE Standards, as well as facilities management department guidelines for indoor air quality.			

Rev	00	Date	08/09/2012	Effective	08/09/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**Attachment A - Indoor Air Quality Complaint and Initial Interview Form**

Location Code: \_\_\_\_\_

Action Completion Date: \_\_\_\_\_

**Indoor Air Quality Complaint and Initial Interview Form**

**IAQ Concern (*Employee Completes*)**

Please complete the section below and give it to your supervisor to forward to your building location's Indoor Air Quality Administrator. Contact your Health & Safety Specialist if you do not know who the IAQ Administrator is for your facility.

LOCATION:		DATE:	
EMPLOYEE NAME:		EMPLOYEE PHONE:	

Describe the nature of the indoor air quality problem:


☐ Check here if using back of form for additional comments

**Initial Interview (*IAQ Administrator Completes*)**

IAQ Admin. Name		DATE Concern Received	
		DATE Initial Interview	
Specific location of problem			
Nature of IAQ problem			
Tentative plan of action discussed with employee			
IAQ Administrator Signature _____			

IAQ Administrator is to provide complainant with copy of this document after initial interview.



	<p align="center"><b>SP 26</b>  <b>SAFETY PROCEDURE</b>  <b>BLOODBORNE PATHOGENS</b>  <b>EXPOSURE CONTROL PLAN</b></p>	<p>0000-000-PR-8024  Custom ID: SP 26  Revision: 01  Effective Date: May 1, 2017  Page 1 of 19</p>
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## 1.0 PURPOSE/SCOPE

- 1.1 This procedure provides requirements for the OSHA standard for Bloodborne Pathogens in Title 29, Code of Federal Regulations 1910.1030 on December 6, 1991. The Exposure Control Plan is a result of the review of PPL Electric Utilities to comply with the written requirements outlined in the regulation. The Exposure Control Plan identifies the personnel covered by the OSHA standard and the methods used for compliance. This plan is to be accessible to employees as required by 29 CFR 1910.20 (e). In addition, the plan is to be made available for examination and copying by the OSHA Assistant Secretary and Director upon request.

## 2.0 RESPONSIBILITIES

<u>SECTION</u>	<u>RESPONSIBLE</u>
Annual Review of Exposure Control Plan – Address, define and document approaches to changes in technology per 1910.1030(c)(1)(v)	Health Services/EU Environmental, Health, & Safety
Exposure Determinations	Affected departments in consultation with Health Services
Methods of Compliance	All affected employees
Hepatitis B Vaccination	Health Services
Responding to an event	First Line Supervisors <ul style="list-style-type: none"> <li>Health Services/Other Medical Providers</li> </ul>
Employee Training	Included within First Aid and CPR training <ul style="list-style-type: none"> <li>Health Services/EU Environmental, Health, &amp; Safety /EU Technical Training</li> </ul>
Medical Recordkeeping	Health Services



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### **3.0 APPLICABILITY**

- 3.1 Consider blood and other potentially infectious materials to be hazardous and follow exposure prevention and personal protection requirements to prevent exposure.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 **Bloodborne Pathogens** Pathogenic microorganisms that are present in human blood and can cause disease. These pathogens include, but are not limited to, the hepatitis B virus and human immunodeficiency virus.
- 4.2 **Contaminated Sharps** Any contaminated object that can penetrate the skin including, needles, scalpels, broken glass, and is contaminated with blood or other potentially infectious materials.
- 4.3 **Exposure (incident)** would occur when blood or other potentially infectious material (OPIM) comes in contact with non-intact skin, the eyes, nose or mouth or if there is a parenteral exposure. Parenteral exposure consists of an injury where a sharp object that is contaminated with blood or OPIM penetrates the skin (e.g. needle stick).
- 4.4 **Feminine Hygiene Products** OSHA does not generally consider discarded feminine hygiene products used to absorb menstrual flow to fall within the definition of regulated waste, as defined by 1910.1030. OSHA expects the waste containers into which these products are discarded to be lined in such a way as to protect employees from physical contact with the contents.
- 4.5 **HBV** Hepatitis B is an infection of the liver caused by the hepatitis B virus (HBV).
- 4.6 **HIV** Human Immunodeficiency Virus (HIV); the virus which causes AIDS or Acquired Immunodeficiency Syndrome.
- 4.7 **Other Potentially Infectious Materials** (OPIM) include the following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Body fluids not considered to be infectious include feces, nasal secretions, sputum, sweat, tears, urine and vomitus unless they contain blood. OPIM includes any unfixed tissue or organ (other than intact skin) from a human (living or dead).



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- 4.8 **Parenteral** Piercing the skin barrier through events such as needle sticks, human bites, cuts, and abrasions.
- 4.9 **Sharps (with Engineered Sharps Injury Protections)** Means a non-needle sharp or a needle device used for with-drawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.
- 4.10 **Universal Precautions** Refers to an infection control procedure where human blood and OPIM will be considered infectious when the status of the specimen or the person receiving medical care is unknown. In addition, where differentiation between types of body fluids is difficult or impossible, the body fluids are to be considered potentially infectious. Employees will adhere to universal precautions as established through employee training and written procedures.

## **5.0 MAIN BODY**

### **5.1 EXPOSURE DETERMINATION**

- 5.1.1 Employees having occupational exposure to bloodborne pathogens are defined by OSHA to be those employees who have reasonably anticipated skin, eye, mucous membrane, or parenteral contact with human blood or other potentially infectious materials (OPIM) as a result of the performance of their job duties. These determinations are made without regard for the use of personal protective equipment.
- 5.1.2 PPL Job Classifications with OSHA defined Occupational Exposure have been determined and include:
- a. PPL Occupational Health Nurses.
  - b. Contract nurses and contract occupational medical services personnel must meet OSHA 1910.1030 requirements. PPL contract holders are responsible to assure compliance.
  - c. First Aid/Emergency Medical Response Teams.
  - d. Certain designated Facilities Management personnel.
- 5.1.3 PPL employees listed above will be offered the Hepatitis B vaccination series and will receive OSHA required training for



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Bloodborne Pathogens. (Note: The consent form for the vaccination is available in Appendix C.)

**5.2 FIRST AID AND CPR TRAINED EMPLOYEES**

- 5.2.1 Employees designated by their job to be trained in First Aid and/or CPR are to receive regularly required training to meet OSHA requirements for Bloodborne Pathogens.
- 5.2.2 Employees who voluntarily take First Aid and/or CPR Training provided by PPL are not covered by the OSHA Bloodborne Pathogen Standard. However, these employees should receive training specific for prevention of bloodborne disease.

**5.3 METHODS OF COMPLIANCE**

**5.3.1 Universal Precautions**

Consider blood and other potentially infectious materials to be hazardous and follow exposure prevention and personal protection requirements to prevent exposure.

**5.3.2 Handling Contaminated Needles and Sharps**  
*(Applicable to laboratory/medical personnel.)*

*Prohibited:*

- a. Contaminated needles and other contaminated sharps will not be bent, recapped or removed.
- b. Shearing or breaking of contaminated needles is prohibited.

**5.3.3 Work Procedures**  
*(Applicable to laboratory medical personnel.)*

- a. To prevent needle stick injuries, the sharps disposal container will be carried to the work area. Immediately after use, contaminated needles and sharps shall be placed in a sharps container for disposal as infectious waste.
- b. Only sharps with a built-in safety feature are permissible.
- c. The sharps container must be replaced before it is overfilled to prevent injuries.
- d. When transporting the sharps container between work areas, the container must be kept closed.



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**5.3.4 Reporting Procedures**

Report all Contaminated Sharps injuries to Health Services and record event on Sharps Injury Log, Appendix A.

**5.3.5 Specimen Handling**

*(Applicable to laboratory/medical personnel.)*

- a. Specimens of blood or OPIM collected for employee medical screening tests are to be placed in a container, which prevents leakage during handling, processing, storage, transport or shipping.
- b. The container for storage, transport, or shipping is either red in color or labeled with the orange/orange-red biohazard symbol with the word biohazard.
- c. When handling specimens, if the outside of the specimen container is contaminated, the entire container is placed within a second container, which prevents leakage or puncture.
- d. This does not include urine samples collected in the Fitness for Duty Programs or under the Drug and Alcohol policies. Urine is not considered potentially infectious material.

**5.3.6 Work Area Restrictions**

*(Applicable to laboratory/medical personnel.)*

- a. In work areas where there is a reasonable likelihood of exposure to blood or other potentially infectious materials, employees are not to eat, drink, apply lip creams, smoke or handle contact lenses.
- b. Food and beverages are not to be kept in refrigerators, freezers, shelves, cabinets, or on counter tops or bench tops where blood or other potentially infectious materials are present.
- c. All medical care procedures will be conducted in a manner, which will minimize splashing, spraying, splattering, and generation of droplets of blood or other potentially infectious materials.
- d. Specimens of blood or other potentially infectious materials will be placed in a container, which prevents leakage, during the collection, handling, storage and transport of the specimens. The container used for this purpose will be labeled or color-coded in accordance with the requirements of the OSHA standard.



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**5.4 BLOODBORNE PATHOGEN KITS**

- 5.4.1 Bloodborne Pathogen kits are to be provided that contain protective equipment for emergency responders. The contents of the kit are approved by PPL's physician. The kits should be located adjacent to First Aid Kits. (See Appendix B)
- 5.4.2 Bloodborne Pathogen kits should be maintained on an inspection schedule to insure availability and integrity of the equipment. Only non-latex gloves shall be used.

**5.5 HEPATITIS B VACCINATION**

- 5.5.1 Employees who have been identified, as having potential occupational exposure to blood or other potentially infectious materials (Section 3) will be offered the Hepatitis B vaccine.
- 5.5.2 The vaccine will be offered at no cost to the employee. The vaccine will be offered after an employee has received Bloodborne Pathogen training and within 10 working days of the employee's initial assignment to a job requiring Bloodborne Pathogen training.
- 5.5.3 The following employees do not need to be vaccinated:
  - a. Employees who have been previously vaccinated with the complete Hepatitis B vaccination series do not need another vaccination series.
  - b. Employees who have had antibody testing, which shows that the employee is immune.
  - c. Employees who for medical reasons cannot receive the vaccinations.
- 5.5.4 Prescreening tests shall not be a prerequisite for receiving the Hepatitis B vaccination.
- 5.5.5 Employees who are offered the Hepatitis B vaccine will sign a consent/waiver form to indicate whether they wish to be vaccinated. Waiver forms are included in Appendix C. Employees who initially decline the vaccine but who later wish to have it may then have the vaccine provided at no cost. The request for the vaccine shall be a written request.
- 5.5.6 If at a future date the U.S. Public Health Service recommends a booster schedule for the Hepatitis B vaccination, the booster will





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be made available at no cost to employees. Should an employee experience an exposure, Health Services will arrange for the employee to have a booster? If employee prefers a testing (Titers) over a booster, Health Services will provide the titer. If the anti-body testing indicates the employee has no Titers, the employee will be scheduled for a booster. Repeat Titers will be obtained 2-3 weeks after the booster.

**5.6 RESPONDING TO AN EVENT**

- 5.6.1 Locate and obtain Bloodborne Pathogens Kit. **Don gloves, goggles, mask, as needed to protect from exposure.**
- 5.6.2 Assist and stabilize injured.
- 5.6.3 Place blood/OPIM (only) contaminated articles and bandages into red bag (from bloodborne kit) and send along with injured employee to hospital for disposal. (As a courtesy, most ambulance crews and hospitals accept red bag materials in this manner.)
- 5.6.4 *Decontamination* – Wearing appropriate gloves, as soon as feasible after contact with blood or OPIM, work surfaces will be decontaminated using bleach solution, alcohol from the bloodborne kit, or with an EPA registered tuberculocidal disinfectant. Bleach solutions should be prepared immediately prior to use. A bleach solution can be made with 1-1/2 cups of household bleach (5.25% sodium hypochlorite) to 1 gallon of water (a 10:1 solution). In order for disinfection to be complete, surfaces must be pre-cleaned of visible material before the germicidal chemical is used. The emphasis is to insure that the disinfecting agent makes contact with the surface being decontaminated. The disinfection agent shall be allowed to stand for 10 minutes on the surface being disinfected.
- 5.6.5 *Broken Glassware* – which may be contaminated, shall not be picked up by hand. A brush, dustpan, tongs or other mechanical means will be used. The equipment used to handle broken glassware will be decontaminated with bleach solution (1-1/2 cups of household bleach to 1 gallon of water), alcohol from the bloodborne kit, or with an EPA registered tuberculocidal disinfectant. Bleach solutions should be prepared immediately prior to use.





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- 5.6.6 *Equipment Contaminated* – with potentially infectious body fluids is to be cleaned immediately or as soon as feasible following the contamination. Wear appropriate gloves.
- 5.6.7 *Handwashing* – Thorough handwashing shall be done after removing gloves and following any exposure to blood or other infectious materials. Where handwashing facilities consisting of running water and soap are not readily available, use antiseptic cleaner from bloodborne kit.
- 5.6.8 *Flushing Eyes, Nose and Mouth* – Flush with water as appropriate as soon as feasible.
- 5.6.9 *Laundry* – CDC Guidelines for Laundry CDC has determined that there is negligible risk of disease transmission:
- Gloves should be worn when handling laundry.
  - Handle the laundry as little as possible with a minimum of agitation.
  - Bag the laundry in the location where it was generated used.
  - Transport in bags that are waterproof and will prevent leakage.
  - Normal laundry cycles should be used according to the washer and detergent manufacturers' recommendations.
  - If you have any questions, contact the Health Services for assistance with determining how to handle contaminated laundry.

**5.7 INCIDENT RESPONSE AND REPORTING**

**Type Incident**

**Follow Section:**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Injured employee applies first aid dressing to his/her own cut.</li> </ul>  | <ul style="list-style-type: none"> <li>No action required; use of first aid kit alone for self-treatment is not considered reportable.</li> </ul> |
| <ul style="list-style-type: none"> <li><u>Not Exposed</u> - a PPL employee assists a person with a bloody injury but does not make contact with blood or OPIM</li> </ul>   | <p>Follow Section 4.8 below. Complete information is entered into the Corporate Corrective Action Tracking System (CCATS) as requested.</p>       |
| <ul style="list-style-type: none"> <li><u>Exposed</u> - A PPL employee renders first aid assistance and comes into contact with another person's blood or OPIM.</li> </ul> | <ul style="list-style-type: none"> <li>Follow Section 4.9 below.</li> </ul>   |



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5.8 First Aid incident involves blood or OPIM, however, **First Aid Provider is not exposed to blood** or OPIM.

5.8.1 Actions:

- a. The Supervisor must provide the employee with PPL Form 4150, Post-Incident Hepatitis B Vaccination Consent Form, within 24 hours. This form is available from the intranet.
- b. Employee or Supervisor enters information into the Corporate Corrective Action Tracking System (CCATS) as requested. Report must have both the name of the employee receiving first aid and the person providing first aid. Complete the day of incident, within 24 hours.

5.9 First Aid incident involves blood or OPIM and the **First Aid Provider is exposed to Blood** or OPIM.

5.9.1 Actions:

- a. Exposure Treatment - An employee who has accidental exposure to blood or OPIM should clean or disinfect the contaminated area. Cleanse a puncture wound or cut with soap and water or antiseptic hand cleaners. Squeeze the site to expel any contamination. If there is a splash in the eyes, rinse with copious amounts of water and seek medical aid.
- b. Give the exposed employee PPL Form 4417, Medical Evaluation, and provide them access to a medical doctor to be examined immediately. OSHA requires the evaluation to be completed within 24 hours. (PPL Form 4417 is in the Bloodborne Pathogen Kit.)
- c. The person who was the source of the blood exposure is given PPL Form 4416, Notice to Attending Physician. (PPL Form 4416 is in the Bloodborne Pathogen Kit.)
  - PPL Form 4416 is sent with the person who is the source of the blood if they are transported to the treating facility. If the source person is not being transported by ambulance to the hospital, they should be encouraged to go to the same treating facility as the exposed employee for HIV and Hepatitis B testing with the Form.
  - PPL Form 4416 instructs the treating facility to test the source person for the HIV and Hepatitis B viruses. The legal requirements for testing will be handled by the treating facility. This requires coordinating testing of the



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source person's blood and the employee exposed to the blood simultaneously. This is to establish the Hepatitis and HIV status of both individuals in order to provide appropriate medical treatment and counseling.

- d. Employee or Supervisor must enter information of the event into the Corporate Corrective Action Tracking System (CCATS). The report must have both the name of the employee receiving first aid and the person providing first aid. Complete within 24 hours.

**5.10 Post-Exposure Incident Evaluation and Follow-Up.**

5.10.1 Following a report of an exposure incident, Health Services shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:

- a. Documentation of the route of exposure and the circumstances related to the incident.
- b. If possible, the identification of the source individual, and if possible, the status of the source individual. The blood of the source individual will be tested after consent is obtained for HIV and HBV infectivity. If consent is not obtained, the physician shall establish that legally required consent cannot be obtained. PA State law allows for testing without consent if a blood sample has been validly obtained.
- c. Results of testing of the source individual will be made available to the exposed employee with the exposed employee informed about the applicable laws and regulations concerning disclosure of the identity and infectivity of the source individual.
- d. If the source individual's blood is being tested, the exposed employee must also be tested. The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained. If an exposed employee refuses testing, Health Services is to document the refusal. If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If within 90 days of the exposure incident the employee elects to have the baseline sample tested for HIV, such testing shall be done as soon as feasible.



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- e. The employee will be offered post-exposure treatment in accordance with the current recommendations of the U.S. Public Health Service.
  - f. The employee will be given appropriate counseling concerning precautions to take during the period after the exposure incident. The employee will be given information on what potential illnesses to be alert for and to report any related experiences to appropriate personnel.
- 5.10.2 A written opinion will be obtained from the health care professional who evaluates employees for the facility. Written opinions will be obtained in the following instances:
- a. When the employee is sent to obtain the Hepatitis B vaccine.
  - b. Whenever the employee is sent to a health care professional following an exposure incident.
  - c. The employee will receive a copy of the evaluating health care professional's written opinion at time of examination or within 24 hours of receipt from Health Services. Health Services will also receive a copy of this initial examination. All follow-up care, additional testing and immunizations will be handled directly between the health care provider and the employee.
- 5.10.3 Health care professionals shall be instructed to limit their opinions to:
- a. Whether the Hepatitis B vaccine is indicated and if the employee has received the vaccine.
  - b. That the employee has been informed of the results of the evaluation following as incident.
  - c. That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials.
  - d. Health Services will provide the necessary instructions to health care providers to assure compliance with these provisions.



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**5.12 MEDICAL RECORDKEEPING**

5.12.1 The files are confidential and will include the name and employee number, Hepatitis B vaccination record, initial reports from the examining physician, medical testing and follow-up. Medical results and follow-up evaluations will be maintained by the examining physician.

5.12.2 The contents of the medical record will not be disclosed without the employee's written consent to any person within or outside the workplace.

5.12.3 The records will be kept for the duration of the employee's employment plus 30 years.

**6.0 REFERENCES**

6.1 OSHA 29 CFR 1910.1030, Bloodborne Pathogens

6.2 PPL EU Safety Rule Book

**7.0 REGULATORY REQUIREMENTS**

7.1 Title 29, Code of Federal Regulations 1910.1030 on December 6, 1991

**8.0 TRAINING/SAFETY**

**8.1 Employee Training**

8.1.1 Training is to be provided to employees identified in this procedure.

8.1.2 New employees with responsibilities or job classifications identified shall be trained before assignment to job duties.

8.1.3 Training shall be completed annually for each employee affected. Records of training should have the date of the training, contents or summary of the training session, the names and qualifications of persons conducting the training, names and job titles of persons attending the training session. The records are to be maintained for a minimum of 3 years.



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- 8.1.4 The training program is to include explanations for the following. MST 080 Bloodborne Pathogens is recognized to include these elements:
- a. The OSHA Standard for Bloodborne Pathogens.
  - b. Symptoms of bloodborne diseases.
  - c. Modes of transmission of bloodborne pathogens.
  - d. The exposure control plan, including the points of the plan, lines of responsibility and how the plan will be implemented.
  - e. Procedures which might cause exposure to blood or other potentially infectious materials.
  - f. Control methods, which will be used to prevent exposure.
  - g. Personal protective equipment available.
  - h. Post exposure medical evaluation and follow-up.
  - i. Signs and labels.
  - j. Hepatitis B vaccine program.
  - k. Bloodborne Pathogen Incident Reporting.
  - l. Modes of Transmission of Bloodborne Pathogens.
  - m. Personal protective equipment available.  
(Barrier-Rescue Breather and Gloves or Microshield Rescue Breather.)
  - n. Post-exposure incident medical evaluation and follow-up.
  - o. Bloodborne Pathogen Incident Reporting.
  - p. If a Bloodborne Pathogen Kit is provided in the work area, review the kit contents with employees.
  - q. Employees are to be given the opportunity to ask questions.
- 8.1.5 OSHA requires that employees be given the opportunity to ask questions during the training program. Those questions that cannot be answered by the reference guide should be referred to the local Health and Safety Specialist.
- 8.1.6 Employees who voluntarily receive First Aid and/or CPR Training provided by PPL should receive training regarding the following:
- a. Universal Precautions.
  - b. Modes of Transmission of Bloodborne Pathogens.
  - c. Personal protective equipment available.  
(Barrier-Rescue Breather and Gloves or Microshield Rescue Breather.)



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- d. Post-exposure incident medical evaluation and follow-up.
- e. Bloodborne Pathogen Incident Reporting.
- f. If a Bloodborne Pathogen Kit is provided in the work area, review the kit contents with employees.

## **9.0 COMPLIANCE and EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS**

- 10.1 Appendix A – PPL Sharps Injury Log
- 10.2 Appendix B – Bloodborne Pathogen Kits
- 10.3 Appendix C – Hepatitis B Vaccination Consent/Waiver Form

PPL Form 4416 – [NOTICE TO ATTENDING PHYSICIAN](#)

PPL Form 4417 – [MEDICAL EVALUATION: BLOODBORNE PATHOGENS](#)

PPL Form 4150 – [VACCINATION CONSENT FORM Post-Incident Hepatitis B](#)

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed annually by Health Services and Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



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## 12.0 RECORD OF REVISIONS

Rev	01	Date	4/27/2017	Effective	5/01/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Denise Nika, Health Services-Occupational Nurse, and Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Updated to reflect changes to staffing structure			

Rev	00	Date	07/18/2012	Effective	07/18/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**APPENDIX A - BLOODBORNE PATHOGENS, PPL SHARPS INJURY LOG**

**PPL Sharps Injury Log**

DATE	LOCATIONS	INCIDENT EVENTS	TYPE/BRAND DEVICE INVOLVED



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**EXPOSURE CONTROL PLAN**

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**APPENDIX B - BLOODBORNE PATHOGEN KITS**

**BLOODBORNE PATHOGEN KITS**

<b><u>ITEM</u></b>	<b><u>PPL CID</u></b>
Bloodborne Pathogen Kit (entire)	375429
<b>Individual units:</b>	
Gown/Cap	375230
Goggle/Mask/Gloves	375231
Bags-Biohazard	375232
Barrier-Rescue Breather	375233
Cleaner-Disinfectant	375234



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**APPENDIX C - BLOODBORNE PATHOGENS, HEPATITIS B VACCINATION  
CONSENT/WAIVER FORM**

**HEPATITIS B VACCINATION CONSENT/WAIVER FORM**

**Employee Name:** \_\_\_\_\_  
PLEASE PRINT

**Employee Number:** \_\_\_\_\_

You are being offered the Hepatitis B vaccine because of the potential for exposure to blood and other potentially infectious body fluids during the course of your work at PPL. Exposure to these materials puts you at risk of acquiring the Hepatitis B virus, which causes a liver infection. The infection can be a short-lived illness, a chronic illness with potential for complications such as cirrhosis or liver cancer, or for some people symptoms may never develop. Your current position makes you eligible to receive the vaccine series at no cost to you. The vaccine is safe and effective.

☐ I decline the Hepatitis B vaccination at this time. I understand that by declining the vaccine, I continue to be at risk of acquiring Hepatitis B. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with the Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

☐ I wish to receive the Hepatitis B vaccination series.

**Employee's Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Original: Health Services



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### **1.0 PURPOSE/SCOPE**

- 1.1 High air temperatures, radiant heat sources, high humidity, and strenuous physical activities have a high potential for causing heat stress in our employees. This procedure is written to provide guidance in recognizing and dealing with potential heat stress conditions.

### **2.0 RESPONSIBILITY**

#### **2.1 Management**

- 2.1.1 As appropriate, establish a heat stress management program and identify responsible personnel.

#### **2.2 Employees**

- 2.2.1 Understand health problems associated with heat stress and discuss questions with your supervisor or safety professional.
- 2.2.2 Identify personal medical conditions that may lead to an increased risk of heat-related illnesses and take the necessary steps needed to protect yourself.
- 2.2.3 Take precautionary steps to reduce the potential of heat-related illnesses.
- 2.2.4 Observe co-workers for signs and symptoms of heat stress illness.

#### **2.3 Supervisors**

- 2.3.1 Identify high temperature environments where work is to be done.
- 2.3.2 Utilize feasible **engineering controls** and **administrative controls** for jobs in hot environments.
- 2.3.5 Provide drinking fluids and time for employees to cool down
- 2.3.6 Observe employees for signs and symptoms of heat stress illness.

#### **2.4 Safety Operations**

- 2.4.1 Maintain this procedure and provide technical support and consultation, as needed.
- 2.4.2 Conduct monitoring and determine stay times, as appropriate for the tasks.

### **3.0 APPLICABILITY**

- 3.1 This procedure is written to provide guidance in recognizing and dealing with potential heat stress conditions.



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### 4.0 TERMS AND DEFINITIONS

- 4.1 **Heat Stress:** The combination of workload and environmental conditions which influence bodily heat gains or losses through conduction, convection, radiant heat, evaporation or metabolic heat processes. High temperatures put stress on our bodies. When the body's cooling system has to work too hard to reduce heat stress, it can strain itself. This physical strain, combined with other stresses such as work, loss of fluids or fatigue, may lead to heat disorders, disability, or even death.
- 4.2 **Dry Bulb (DB):** Temperature is an uncorrected direct measurement of air temperature. This temperature is proportional to heat exchange by convection.
- 4.3 **Administrative controls:** Controls implemented to reduce worker exposure to heat through work practices. (i.e. worker rotation, non-physical work during high temperatures, hydration, etc.)
- 4.4 **Engineering Controls:** Controls implemented to reduce worker exposure to heat through design. (i.e. air conditioning, cooling fans, increased general ventilation, etc.)
- 4.5 **Globe Temperature (GT):** Temperature, which takes the effects of radiant heat and convection into consideration.
- 4.6 **Stay Time:** The conservative estimate of the length of time which an employee can be exposed to the work environment without suffering physiological/psychological effects due to heat stress.
- 4.7 **Stay Time Table:** See Attachment A which refers to reducing impact of potentially stressful hot environmental conditions. Instrument measurements of WBGT are compared to work clothes worn and work activity levels to provide guidance on how long employees may be expected to work before they leave the area to cool themselves.
- 4.8 **Wet Bulb (WB):** Temperature takes the effects of evaporation into consideration. This temperature is inversely proportional to heat exchange by evaporation.
- 4.9 **Wet Bulb Globe Temperature (WBGT):** An index of environmental heat stress based upon a combination of temperature readings. (Individual dry bulb, natural wet bulb, and globe temperature values may be used in the absence of a meter.)
- The temperature value of °F WBGT is a value calculated by the instrument to be equal to the sum of 0.7 (NWB, natural wet bulb) + 0.2 (GT, globe temperature) + 0.1 (DB, dry bulb) for measurements in areas with infrared radiant heat exposures (e.g., solar, molten metal, hot surfaces). For measurements in areas without infrared heat exposure,  $WBGT = 0.7 (NWB) + 0.3 (GT)$ .



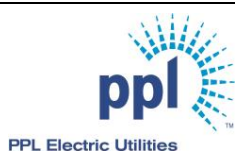
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### 5.0 MAIN BODY

#### 5.1 General Requirements

- 5.1.1 When work in a high temperature environment is being planned, the supervisor is responsible to consider **engineering** and **administrative controls** to reduce or eliminate employee exposure to heat stress.
- Where a job calls for inspection only or is of duration of less than 15 minutes, usually no extraordinary steps need to be taken.
  - Utilize **engineering controls** first if possible. If engineering controls are not possible, implement **administrative controls** to lessen the amount of time employees are exposed to high-temperature work conditions.
- 5.1.2 Consult records of similar jobs conducted under equivalent environmental conditions. If, after engineering and administrative controls are implemented, the job continues to be recognized as having potential heat stress concern, monitoring should be conducted.
- Monitoring is to be conducted with a heat stress meter that has been calibrated within the past year to assure its effectiveness. Note that the temperature value of °F WBGT is a value calculated by the instrument to be equal to the sum of  $0.7(\text{natural wet bulb}) + 0.2(\text{globe temperature}) + 0.1(\text{dry bulb})$ .
  - See Attachment A (Stay Time Table) for recommended work/rest schedules based on monitoring data.
- 5.1.3 FR clothing can add to the effects of heat stress while working in a hot environment. When working in hot environments, it is recommended to wear FR clothing only when it is required. Light colored and breathable clothing should be worn when FR clothing is not required.
- 5.1.4 After stay times are reached, employees are encouraged to exit the heat stress area and rest in a cool area with good air movement and drinking fluids.
- 5.1.5 The human body becomes acclimated to heat gradually, normally over a one to two week period of exposure to higher temperatures. Because of this, the transition between winter, spring, and summer temperatures can have an increased effect on the human body. Extra caution and prevention techniques need to be taken during these times to reduce employee exposure to heat-stress.
- 5.1.6 Cooling vests (CID #902365 and #902366) are available and can be important components to working safely under extreme heat stress conditions. Such conditions may include very high temperatures, heavy work, and/or layers of whole body personal protective coveralls. **Use of cooling devices may extend stay time, however extra care must be exercised to observe employees to assure they are not experiencing heat stress symptoms.**
- Follow manufacturer's recommendations for ice vests. Wear a shirt between skin and ice vest to avoid over-chilling.



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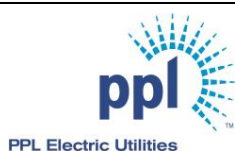
### 5.2 Heat-Related Illnesses

Table 1		
Heat-Related Illness	Symptoms	First-Aid Measures
<b>Heat Stroke</b> - A condition that occurs when the body becomes unable to control its temperature, and can cause death or permanent disability	<ul style="list-style-type: none"> <li>• High body temperature (above 103F degrees)</li> <li>• Confusion, loss of coordination</li> <li>• Hot, dry skin or profuse sweating</li> <li>• Throbbing headache</li> <li>• Seizures or coma</li> </ul>	<ul style="list-style-type: none"> <li>• Immediate medical assistance (911)</li> <li>• Move the worker to a cool, shaded area</li> <li>• Remove excess clothing and apply cool water to their body</li> </ul>
<b>Heat Exhaustion</b> - The body's response to an excessive loss of water and salt, usually through sweating	<ul style="list-style-type: none"> <li>• Rapid heartbeat, heavy sweating</li> <li>• Extreme weakness or fatigue</li> <li>• Dizziness, nausea, vomiting</li> <li>• Irritability</li> <li>• Fast, shallow breathing</li> </ul>	<ul style="list-style-type: none"> <li>• Rest in a cool area</li> <li>• Drink cool water</li> <li>• Take a cool shower</li> </ul>
<b>Heat Cramps</b> - Affect workers who sweat a lot. Sweating depletes the body's salt and moisture levels	<ul style="list-style-type: none"> <li>• Muscle cramps, pain, or spasms in the abdomen, arms or legs</li> </ul>	<ul style="list-style-type: none"> <li>• Stop activity and sit in cool place</li> <li>• Rehydrate</li> <li>• Seek medical attention if cramps do not subside within one hour</li> </ul>
<b>Dehydration</b>	<ul style="list-style-type: none"> <li>• Fatigue, flushed skin, dizziness</li> <li>• Heat sensation or chills</li> <li>• Nausea, diarrhea, vomiting</li> <li>• Muscle cramps</li> <li>• Dry skin and mouth</li> <li>• Headache</li> </ul>	<ul style="list-style-type: none"> <li>• Rehydrate</li> </ul>

### 5.3 Heat-Stress Prevention

- 5.9.1 Hydration: Employees are responsible to monitor their hydration to ensure they do not become dehydrated.
- Drink water even when you are not thirsty. Once you feel thirsty, your body may already be dehydrated.
  - Recommended daily water consumption is half of your body weight in ounces. For example, a 200 lbs. person should drink 100 oz. daily.
  - Do not overuse sports drinks (i.e. Gatorade). The recommended amount is one (1) sports drink for every four (4) bottles of water.
  - Eat more fruits and vegetables
  - Avoid alcohol and drinks with large amounts of sugar.
- 5.9.2 Monitor heart rate and breathing patterns for changes.
- 5.9.3 Plan more physical tasks for cooler portions of the day.
- 5.9.4 Split up work in multiple short sessions if possible





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### 6.0 REFERENCES

- 6.1 OSHA has no regulations that address heat stress; however they provide information on their website. ([OSHA Heat Stress Information](#)).
- 6.2 Additional references include: American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances and Physical Agents, and CDC-NIOSH "Working in Hot Environments".

### 7.0 REGULATORY REQUIREMENTS- N/A

### 8.0 TRAINING / SAFETY

### 9.0 COMPLIANCE AND EXCEPTIONS – N/A

### 10.0 ATTACHMENTS

- 10.2 Attachment A – Stay Time Table
- 10.3 Attachment B- Heat Stress Temperature Readings

### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	03	Date	2/28/2018	Effective	4/1/2018
<b>Prepared by:</b>		Steve Mondschein, Health and Safety Professional			
<b>Reviewed by:</b>		Brian Kostik, Supervisor – Safety Operations: Dalton Shorts, Safety Professional: Elizabeth McKay, Safety Professional			
<b>Approved by:</b>		Brian Matweecha, Manager – Safety Operations			
<b>Revision Comments:</b>		Removed outdated information and included new techniques to prevent heat-related illnesses			

Rev	02	Date	6/16/2017	Effective	6/16/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Project Manager-Safety			
<b>Reviewed by:</b>		Safety Pros: Jared Dyer, Brian Kostik, Dalton Shorts, Steve Mondschein, and Elizabeth McKay			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed and repaired broken web links.			



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<b>Rev</b>	01	<b>Date</b>	9/07/2015	<b>Effective</b>	10/01/2015
<b>Prepared by:</b>		Deborah A. Sweinhart, Project Manager-Safety			
<b>Reviewed by:</b>		Colin Brigham, President-OneSource, Inc.			
<b>Approved by:</b>		Scott Parker, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed and approved by Colin Brigham, Certified Industrial Hygienist. There were no recommended changes to this procedure.			

<b>Rev</b>	00	<b>Date</b>	06/26/12	<b>Effective</b>	06/26/12
<b>Prepared by:</b>		David Hughes, Safety			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes, Manager-EHS Safety			
<b>Revision Comments:</b>		General Safety Procedure converted to PPL EU Safety Procedure			



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**ATTACHMENT A – Stay Time Table**

(° F WBGT)				
Clothing:	Regular Work Clothes		Heavy Clothing	
	Activity Level:		Activity Level:	
Stay Time (Minutes)	Moderate	High	Moderate	High
	° F WBGT	° F WBGT	° F WBGT	° F WBGT
<b>0 - 15</b>	108° - 122°	100° - 108°	100° - 115°	93° - 100°
<b>15 - 30</b>	97° - 108°	90° - 100°	90° - 100°	86° - 93°
<b>20 - 45</b>	93° - 100°	89° - 93°	86° - 93°	82° - 91°
<b>30 - 60</b>	91° - 97°	86° - 90°	84° - 90°	79° - 82°
<b>45 - 90</b>	90° - 93°	84° - 89°	82° - 86°	77° - 81°
<b>60 - 120</b>	86° - 91°	82° - 86°	79° - 84°	75° - 79°
<b>90 - 3h</b>	84° - 90°	81° - 89°	77° - 82°	73° - 81°
<b>2h - 4h</b>	82° - 86°	79° - 82°	75° - 79°	72° - 75°

**INSTRUCTION:** Establish the proper column for clothing requirement and anticipated activity level for the job. Using the instrument's ° F WBGT value, determine recommended stay time. Be sure to provide adequate and appropriate time liquids and location for cool down.

Listed temperatures are ° F WBGT (degrees farenheight, wet bulb globe temperature). This reading is not a single-temperature measurement. It is generally provided by a heat stress instrument. The temperature value of °F WBGT is a value calculated by the instrument to be equal to the sum of 0.7 (NWB, natural wet bulb) + 0.2 (GT, globe temperature) + 0.1 (DB, dry bulb) for measurements in areas with infrared radiant heat exposures (e.g., solar, molten metal, hot surfaces). For measurements in areas without infrared heat exposure, WBGT = 0.7 (NWB) + 0.3 (GT).

**Clothing** - The evaluation of clothing requirements that do not allow free air exchange or affects the amount of cooling available form suits, plastics and rubber-lines clothing. To compensate for this loss of an important source of body heat removal, the appropriate column of Attachment B should be used to determine stay times for the clothing ensemble and work type.

**Activity Levels:**

**Moderate** - light or moderate work at a machine or bench, welding, most material handling and work not requiring continual motion.

**High** - demanding work as intermittent heavy lifting, pushing, pulling or climbing ladders or stairs. Work requiring continual motion.

**Cool down time** - After Stay/Action Times are reached; employees are encouraged to exit the heat stress area and not return for 1-1/2 to 2 times the Stay/Action Time. Employees should be provided a cool area with good air movement and drinking fluids. Good judgment by supervision and employees should prevail in any case of high temperature work where more stringent measures are felt necessary.

**Acclimatization** - because people become accustomed to the heat gradually (week or two), initial hot spells at the beginning of the summer may require more careful observation and adherence to stay times



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**ATTACHMENT B - Heat Stress Temperature Readings**

Plant or Region:		Task:	
Location: (Unit/Elevation)		Clothing:	<input type="checkbox"/> Regular Work Clothes <input type="checkbox"/> Heavy Clothing Other _____
Date: Time:		Activity Level:	<input type="checkbox"/> Moderate <input type="checkbox"/> High
Instrument: (Mfg. & Serial)		Measurements Taken by:	

Measurements:


Location:	WB	GT	DB	WBGT IN*	WBGT OUT**	Suggested Stay Time: (From Attachment B)

\*WBGT-IN for measurements "INside", with **no radiant** sun or boiler heat.

\*WBGT-OUT for measurements "OUTside," **with radiant sun or boiler heat**.

Comments:

Historical measurements of similar jobs under equivalent conditions may provide useful guides to future stay times. For this reason, it is recommended that the following record be made and maintained at a location where others can access it. It is not mandatory that measurements be made prior to any specific heat stress exposure task.

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## **COMMERCIAL DRIVER'S LICENSE (CDL) WORK INSTRUCTION PROCEDURE**

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### **1.0 PURPOSE/SCOPE**

- 1.1** This document will ensure that all PA based employees who operate Commercial Motor Vehicles (CMV's) which include CDL and Non-CDL over 10,001 pounds are identified, participate in all required medical examinations including drug and alcohol testing, and if required, maintain current CDL in accordance with applicable federal and state regulations. This document does not address common CMV driving concerns like height/weight, HAZMAT, door stickers, or load securement.
- 1.2** PPL PA based companies (PPL) are considered a "motor carrier" and is subject to Federal Motor Carrier Safety Regulations (FMCSR) since the company is engaged in activities that use CMV's and requires employees to operate them.
- 1.3** The key goals of this program are to ensure that:
  - 1.3.1** Specific roles and responsibilities are assigned so that a compliant program is implemented in PPL Companies in PA to meet the regulatory requirements.
  - 1.3.2** Drivers that are required to hold a CDL will have a current and valid CDL.
  - 1.3.3** Drivers operate CMV in strict accordance of their CDL endorsements and restrictions.
  - 1.3.4** Qualified CMV drivers can safely operate their assigned vehicles in accordance with all applicable regulations.
  - 1.3.5** Employees who currently do not meet all the requirements of a qualified driver are prohibited from operating PPL's CMVs.
  - 1.3.6** All CDL drivers are required to participate in mandated drug and alcohol testing and DOT physicals.
  - 1.3.7** Each driver of a CDL and Non-CDL vehicle, over 10,001 pounds has a current and complete driver's qualification file (DQF). The DQF is a confidential file that shall be maintained for each PPL CMV holder. This file shall be kept current and stored in a secure location with controlled access.

### **2.0 RESPONSIBILITIES AND ASSIGNMENTS**

NOTE - \* indicates a documented is required to be in the Driver Qualification File (DQF).

#### **2.1 Manager of Training or equivalent**

- 2.1.1** Maintain the Driver Qualification File.
- 2.1.2** \* Requesting and reviewing the DOT Motor Vehicle Record (MVR) for affected drivers through the Asurint application. Initial reviews are automatically completed and marked as "passed" if there are no violations. If an employee has a violation of any kind, the system will mark the



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MVR for review. A training representative will manually review the (marked for review) MVR's for any violations. The record will be initialed by the reviewer.

- 2.1.3 \* Obtain a copy of the report for any DOT accident.
- 2.1.4 Periodic audits of the DQF.
- 2.1.5 \* Ensure all new hires/transferring employees are qualified to operate PPL's CMVs through a demonstrated road test for any tractor trailer, N or X endorsements.
- 2.1.6 \* Complete Entry-Level Driver Training Certificate for CMV for employees under 365 days CDL experience.

### 2.2 HR Business Partner (HRBP)/ Health Services Manager or equivalent

- 2.2.1 \* Responding to and requesting the Safety Performance and Drug and Alcohol history inquiries from prospective employers affecting former/new employees in the DOT CDL/CMV program. Document the finding in Asurint (refer to 5.14 Employment Application and Background/Pre-Hire Check of this document).
- 2.2.2 Ensuring new hires are subjected to pre-employment Drug Test (without regard to candidate having a current CDL or CMV).
- 2.2.3 Scheduling of new hires to have DOT physical completed when appropriate.
- 2.2.4 \* Completion of and maintaining immediate access to DOT employment application and original MVR or relative documents to training.
- 2.2.5 Notify Manager of Training of any new drivers (new hires or transferring employees) and add documents as needed.
- 2.2.6 Coordination of the DOT required physicals prior to expiration.
- 2.2.7 Coordination/Administration of PPL's Drug and Alcohol program.
- 2.2.8 Assisting business lines with processing payment and re-imbursement of medical co-pays and driver's license expenders as per GP700.

### 2.3 CDL/CMV Supervisors

- 2.3.1 Ensure employees that will be assigned CDL/CMV tasks are assigned and attained in HRPR.
- 2.3.2 Notify the HR Business Partner (HRBP) if there is any concern about the qualification of the employee to drive.



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**2.3.3** Sending employee for Drug and Alcohol testing when advised by their designated agent and keeping the appointment confidential, up to the testing time as instructed.

**2.3.4** Complete all assigned training related to supervising a CDL/CMV driver.

### **2.4 CDL/CMV Drivers**

**2.4.1** Must maintain their CDL/CMV credentials by attending training, physicals, and submission to stated Drug and Alcohol testing (for CDL drivers).

**2.4.2** \* Must ensure their driver's license and medical exam certificate does not expire.

**2.4.3** \* Must obtain and submit DL-11CD waiver/exemptions one time. If choosing EI or EA, a copy of the DL-11CD must be submitted to PennDOT and Health Services.

**2.4.4** Must complete all assigned training and reporting requirements mandated by federal and state regulations.

### **3.0 APPLICABILITY**

This process is used to ensure PPL meets federal and state regulations for CDL/CMV operations.

#### **3.1 Ownership and Revisions**

Technical Development & Improvement

#### **3.2 Quality Assurance**

Quality assurance can be achieved through periodic review of program elements by Manager of Training.

### **4.0 TERMS AND DEFINITIONS**

#### **4.1 DOT – Department of Transportation**

**4.2 DOT Accident** – is defined under FMCSR 49 CFR 390.5 as an occurrence involving a CMV operating on a public road in interstate or intrastate commerce that results in (1) fatality; (2) bodily injury resulting in the immediate receipt of medical treatment away from accident scene; or (3) one or more vehicles incurring disabling damage requiring motor vehicle(s) to be transported away from accident scene by truck or other motor vehicle.

**4.2.1** The Federal Motor Carrier Safety Administration (FMCSA) does not consider an accident recordable if it is an occurrence that involves only boarding or alighting from a stationary vehicle, or only cargo loading or unloading.





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### 4.3 Commercial Driver's License (CDL) Class

**4.3.1 CLASS A** – designation refers to combination vehicles with a gross vehicle weight rating of 26,001 pounds or more provided the gross vehicle weight rating of the vehicle being towed is in excess of 10,000 pounds. The holder of a Class A license is qualified to operate vehicles for which a Class B is issued. Where required, appropriate endorsements must be obtained.

**4.3.2 CLASS B** – designation refers to single vehicles with a gross vehicle weight rating of 26,001 pounds or more, or any such vehicle towing a vehicle not in excess of 10,000 pounds. Where required, appropriate endorsements must be obtained.

**4.4 Commercial Motor Vehicle (CMV)** – refers to vehicles engaged in business and commerce and can be divided into three distinct categories: CMV-CDL, CMV-non CDL, and Non-CMV.

**4.4.1 PA Definition** – In Pennsylvania, 67 PA Code Part 231.8 modifies the US DOT (49 CFR 390.5) definition of a "commercial motor vehicle" (CMV) to be any motor vehicle or combination used on a highway in intrastate commerce to transport passengers or property when the vehicle meets one of the following conditions:

- a. Has a gross vehicle weight rating or gross combination weight rating, or gross vehicle weight or gross combination weight of 17,001 pounds or more, whichever is greater. Federal law (FMCSR 49 CFR 390.5) defines a CMV as any vehicle that weighs 10,001 pounds or greater.
- b. Is transporting hazardous materials which are required to be placarded in accordance with Department regulations.

**4.5 DOT Physical Card** – refers to the medical exam certification card that is issued to the employee after successful completion of his/her DOT physical. This is also referred to as the medical examiner's certificate. Employees must carry the certificates.

**4.6 Driver Qualification File (DQF)** – This is a confidential file that shall be maintained for each PPL CDL holder. This file shall be kept current and stored in a secure location with controlled access.

**4.7 Employer** – means any person or organization that owns or leases a commercial motor vehicle or assigns employees to operate a commercial motor vehicle.

**4.8 Entry Level Driver** – A driver with less than a year (<365 days) of experience operating a CMV with CDL.

**4.9 Federal Motor Carrier Safety Administration (FMCSA)** – was established within the Department of Transportation pursuant to the Motor Carrier Safety Improvement Act of 1999 (49 U.S.C. 113).

**4.10 Interstate Commerce** – is trade, traffic, or transportation involving the crossing of a state boundary. Either the vehicle, its passengers, or cargo must cross a state boundary, or there must be the intent to cross a state boundary to be considered an interstate carrier.

**4.11 Motor Carrier** – Regardless of the industry, any employer, employee, or vehicle involved in the transportation of property or passengers in interstate commerce, with a vehicle of gross vehicle weight



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rating (GVWR) or combination weight rating (GCWR) of 10,001 pounds or greater, is subject to Federal Motor Carrier Safety Regulations (FMCSR). PPL COMPANIES IN PA is engaged in activities that use CMVs and requires employees to operate them. For these reasons, the company is classified as a "motor carrier" and is subject to Federal Motor Carrier Safety Regulations (FMCSR).

- 4.12 MTO (Major Traffic Offense)** – A violation that results in the automatic disqualification of commercial driving privilege.

Examples include driving under the influence and leaving the scene of an accident. Two or more major traffic offenses result in a lifetime disqualification.

- 4.13 STO (Serious Traffic Offense)** – A violation that does not automatically result in a disqualification. However, the accumulation of two or more serious traffic offenses within a 3-year period will result in a disqualification.

## **5.0 MAIN BODY**

### **5.1 Determination of Coverage Under Program**

- a. PPL shall determine if an employee is covered under this CMV/CDL compliance program by referring to Chart 1.
- b. Commercial Motor Vehicle (CMV) refers to vehicles engaged in business and commerce and can be divided into three distinct categories: "CMV-CDL", "CMV-Non-CDL", and "Non-CMV".
  - a. A vehicle is primarily designated as a CMV based on its gross weight, the activity of the drivers, and the location in which the vehicle is operated. In general, PPL employees who work within Pennsylvania and drive a CMV should be classified as Non – Excepted Intrastate (NA) on DL-11cd DOT form.
  - b. Employees who operate Non-CMVs are generally exempt from this program. However, all PPL COMPANIES IN PA employees are covered under the company's drug and alcohol policy.
  - c. Any employee who operates as CMV-Non-CDL is required to participate in the DOT physicals and employees who operate as a CMV-CDL are required to hold a CDL in addition to participating in DOT physicals.



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Chart-1 CDL and DOT Physical Requirements			
Criteria	Intrastate Transportation		
Total Weight (lbs.)	10,001 to 17,000	17,001 to 26,000	26,001 or greater
Meets PA CMV Definition? <sup>2</sup>	No	Yes	Yes
DOT Physical Required? <sup>3</sup>	No	Yes	Yes
CDL Required? <sup>1</sup>	No	No	Yes
DOT Drug and Alcohol	No	No	Yes
Criteria	Interstate Transportation		
Total Weight (lbs.)	10,001 to 26,000		26,001 or greater
Meets CMV Definition? <sup>3,4</sup>	Yes		Yes
DOT Physical Required? <sup>3</sup>	Yes		Yes
CDL Required? <sup>1</sup>	No		Yes
Notes and References			
1. This chart assumes that employees will not be transporting hazardous materials requiring placarding, nor will they be operating a vehicle designed to carry 16 or more people including the driver. A CDL would be required under these conditions.			
2. 67 PA Code Part 231.8 (Pennsylvania CMV definition)			
3. FMCSR Title 49 CFR, Part 383.5 (CMV-CDL definition)			
4. FMCSR Title 49 CFR, Part 390.5 (Federal CMV Non-CDL definition)			
5. FMCSR Title 49 CFR, Part 391 (Physical qualifications for drivers)			

**5.2 CDL Reimbursement (GP 700)**

PPL shall reimburse expenses in accordance with GP 700.

**5.3 Self-Reporting**

Each CDL driver must report all violations to supervision immediately after receiving such violations. Failure to promptly self-report will result in disciplinary action up to and including termination.

**5.4 Maintaining Qualifications**

Only qualified drivers can operate a CMV. A qualified driver must meet all physical requirements and skills requirements and may also hold a CDL based on the type of vehicle and nature of vehicle operation.



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- a. CDL drivers must possess a valid CDL and be included in PPL's random drug and alcohol testing program. CMV Drivers without a CDL are NOT included in PPL's random drug and alcohol testing program.
- b. Drivers holding a CDL shall follow the current requirements set forth by PennDOT.
- c. CDL drivers shall only operate a CMV for which they have the correct classification, and in accordance with their endorsement and restriction designations.
- d. Prior to operating a CMV, the CDL driver shall complete a daily vehicle inspection. A report must be signed, dated, and kept in the CMV only if an issue is found and must be kept during the duration of that day's usage by that driver. If a driver changes during the course of the day, the new driver must complete a new daily vehicle inspection report.
- e. All qualified drivers shall carry a current DOT physical card when on-duty. This can be either the original or a copy of a current medical exam certificate that proves the driver is physically qualified to drive a commercial motor vehicle. (Refer to FMCSR 49 CFR 391.41 (a)(2)). Upon completion of the DOT Physical, the medical examiner will provide the employee with DOT Medical Exam Certification card. It is the responsibility of the driver to submit a 5-inch by 7-inch copy of their DOT Physical Card to PennDOT.
- f. Failure to maintain either a DOT Physical card or Skills Performance Evaluation (SPE) waiver will result in the driver being prohibited from operating any CMV. Variance to a DOT Physical (refer to FMCSR 49 CFR 391.49b).
- g. Medical Waiver/Exemptions (refer to FMCSR 49 CFR 391.41 (a)(2)(ii)). A driver that qualifies for the medical examiner's certificate by virtue of having obtained a medical waiver/exemption from FMCSA, in the form of an exemption letter or a skill performance evaluation certificate must have his or her copy of the variance documentation when on-duty. Driver is responsible for following all mandated requirements to obtain, maintain, and renew the waiver/exemption status.

**5.5 DOT Physicals (FMCSR 49 CFR 391.45)**

**5.5.1** PPL and its employees shall comply with the regulations and laws that require all drivers who operate a CMV to be medically examined and certified as qualified to operate a CMV. PPL CDL physicals are conducted and documented at the following frequencies based on the CDL drivers' conditions, and as determined by a qualified medical provider:

- a. MED073: 3 Months
- b. MED074: 6 Months
- c. MED075: 24 Months
- d. MED076: 12 Months
- e. MED078: 24 Months (Grandfathered or CMV)



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- f. MED079: 12 Months (Grandfathered or CMV)

### 5.5.2 Employee is unable to pass the physicals:

- Medical examiner will advise Health Services immediately of the failed exam.
- Health Services will issue an immediate email to the employee, his/her supervisor, and Training, followed by an email to the employee.
- Health Services will include a completed Form 4192 to the employee listing the required steps to gain a passing exam. Health Services will copy the HR Business Partner and the supervisor, without the medical information, so that the employee's qualifications are being monitored in relation to his/her qualifications for their listed job requirements.

### 5.6 CDL Renewal

A PennDOT CDL expiration date is calculated by the state on your issue date. The majority of the time it is valid for four years, expiring on the day after the driver's birth date. PennDOT automatically sends an invitation to renew (DL-58A) to the driver three months prior to expiration, to the driver's home.

PennDOT requires that each CDL driver renew their CDL in person, at a local PennDOT office. It is the responsibility of the CDL driver to attend to the application process and to allow ample lead time to ensure all deadlines are met such that there is no lapse in their qualifications.

### 5.7 Driver's Hours, Restrictions, and Recordation Requirements (refer to FMCSR 49 CFR 395, B-321295, Legislative Exemptions from Safety Requirements administered by the Federal Motor Carrier Safety Administration, January 31, 2011)

PPL interprets this exemption to apply to all hours-of-service regulations under FMCSR because PPL operates within 100 air-miles of their base location.

### 5.8 CDL Endorsements

CDL drivers shall comply with all restrictions and endorsements as indicated on their CDL License and shall only perform operations for which they have valid and current credentials.

Endorsements refer to an authorization to an individual's commercial learner's permit or license required to permit the individual to operate a commercial motor vehicle with one of the following Endorsements.

Endorsements are designated by a letter code as follows:

- H - Required to drive a vehicle with hazardous materials placards (driver must be 21 years of age).
- N - Required to drive a vehicle with tanks larger than 119 gallons.
- T - Required to drive double and triple trailers.
- X - Represents a combination of the hazardous materials and tank vehicle endorsements (driver must be 21 years of age).



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### 5.9 Restrictions

Restrictions – are placed on the CDL to designate actions that are required, such as wearing corrective lenses, or actions that are not permitted such as not operating commercial motor vehicles with air brakes. Restrictions are designated by a letter code as follows:

- 1 – License holder must wear corrective lenses when driving (glasses/contacts)
- 3 – Vehicle must be equipped with an automatic transmission (no manual transmission)
- 6 – License holder is considered a classified driver because of a physical impairment that will not affect ability to drive (missing fingers, missing and arm, etc.)
- E – Prohibits driving a commercial motor vehicle equipped with a manual transmission
- G - Indicates the driver is qualified medically by operation of 49 CFR §391.64
- K - Restricts the driver to intrastate driving
- L - Restricts the driver to vehicles not equipped with air brakes
- O - Prohibits a Class A driver from driving a truck, tractor-trailer combination
- Q - Requires the driver to wear corrective lenses
- V - Indicates the driver has been issued a medical variance
- Y - Requires the driver to wear a hearing aid(s)
- Z - Prohibits driving a commercial motor vehicle with full air brakes

### 5.10 Tracking Drivers Qualifications

Under FMCSR 49 CFR 391.15, the motor carrier (PPL) must ensure that CDL holders possess a current and valid CDL and are fit to drive. In some PPL job titles, maintaining a CDL is a job requirement. By tracking PPL's employee's driver qualification status, PPL achieves three main purposes:

- 5.10.1 To identify drivers who are not eligible to drive commercial vehicles.
- 5.10.2 To ensure their driver qualifications are up-to-date.
- 5.10.3 To ensure all DQF requirements are met.

### 5.11 Criterial for Disqualification

#### 5.11.1 Conditions that can lead to disqualification (but is not limited to):

- a. You have course credit for MED999-Medical Self-Certification.
- b. Not having the proper CDL/CMV qualification in HRPR assigned and attained.
- c. Leaving the scene of an accident.
- d. Other conditions deemed appropriate by line of management (e.g. safety performance, etc.).
- e. Not having a valid CDL.
- f. Not having a valid DOT Medical Exam Certificate.
- g. Not having a medical waiver/exemption noted on the medical certification, if applicable.



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- h. Has exceeded the allowable number of points on their driving record.
- i. Has a medical restriction, either temporary or permanent, precluding the employee from driving.
- j. Driving under the influence of alcohol (e.g. driver's blood alcohol concentration level is 0.02% or higher when driving a CMV).
- k. Having been permanently not cleared for DOT physical.
- l. Refusing state-prescribed intoxication testing.
- m. Driving a CMV while under the influence of a 21 CFR Part 1308.11 Schedule 1 drug.
- n. Using a hand-held phone or texting while driving a CMV.
- o. Serious Traffic Offenses (STO) include but not limited to:
  - i. Exceeding the speed limit by 15 mph or more
  - ii. Reckless driving
  - iii. Following too closely

**5.11.2 Disqualification Periods**

The drivers will be subjected to disqualification periods specified in Table 49 CFR 383.51.

**5.12 Driver Road Test (refer to FMCSR 49 CFR 391.31)**

Each CDL driver shall initially demonstrate the safe and competent operation of all PPL CMVs that will be operated by the employee. This shall be required before the driver will be allowed to operate a CMV on public roads. Upon successful completion of the road test, the driver shall receive a certificate of satisfactory completion of that test.

The road test must be administered by designated individuals who are qualified to determine whether the employee that was tested has demonstrated competent operation of the CMV to which that driver will be assigned.

PPL shall provide the road test form on which the party administering the test will rate the performance of the person taking the test, as to each operation or activity tested.

The test administrator must sign the road test form and upon successful completion of the road test, complete a certificate of driver's road test. One copy of the certificate must be given to the person who was tested. The signed, original road test form and certificate, or copies of it will be retained in PPL COMPANIES IN PA's DQF for that driver.

**5.12.1 Alternative to Road Test (refer to FMCSR 49 CFR 391.33)**

As a permissible alternative to administration of the road test, PPL may accept a copy of a valid certificate of driver's road test issued to driver applicant, within preceding 3 years, or a valid CDL issued to operate specific categories of CMVs. The CDL would need to be issued by PennDOT and it would also need to be for the type of vehicle that PPL will require the employee to operate. PPL shall maintain a copy of the certificate or CDL in the DQF.





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### 5.13 Employment Application and Background/Pre-Hire Check

Applications obtained by HR must contain all the data outlined in 49 CFR 391.21. New hire candidates and existing employees who enter a Job Title (position) that requires a CDL must complete the same job application that contains information outlined by the DOT regulation. A copy of the application is stored in BrassRing.

HR also shall maintain records pertaining to its driver investigative and safety performance history in the DQF, as outlined in 49 CFR 391.25. Access to such data must be restricted only to those who are involved in the hiring decision or who control access to the data.

Attachment I list the contents of the DQF. HRBPs and the Manager of Training must take all precautions reasonably necessary to protect records from disclosure from any person who is not directly involved in deciding whether to hire the driver. PPL Companies in PA may not furnish any alcohol or controlled substance information to its insurer.

### 5.14 Prospective Employer Requests

Prospective employer requests are forwarded to Health Services (HS) for processing.  
HS will:

- a. Contact the Manager of Training or equivalent within Tech Development & Improvement for the annual safety and accident related information.
- b. Check the employee's medical file for required information.
- c. Complete the submitted forms and respond to the prospective employer.

HS must respond within 30 days after the request is received and may do so by letter, facsimile, or e-mail designed to ensure confidentiality. HS will save a copy of the submittal in the employee's medical file.

### 5.15 Driver Qualifications

#### 5.15.1 Training (FMCSR 49 CFR 380-397)

Drivers shall receive training that is applicable to the vehicles that they will be assigned to operate. At a minimum, training shall cover the major topics. See Section 8.1 for specific training requirements.

#### 5.15.2 Self-Certifications

Self-Certification is required for all CMV drivers. For purposes of PPL business, self-certifying as either **INTERSTATE** (have the ability to take a commercial motor vehicle requiring a CDL across Pennsylvania state borders and into other states) or **INTRASTATE** (restricting yourself to just being able to operate a CDL required vehicle within the borders of Pennsylvania) is acceptable.

**NOTE** – If you are self-certified as INTRASTATE and are traveling under a declaration of emergency for storm response, your INTRASTATE self-certification restriction will be waived, and you will be permitted to travel.





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Below are the options on Form DL-11CD:

- a. **NI** – I drive a commercial vehicle both inside and outside the boundaries of Pennsylvania, INTERSTATE.
- b. **NA** – I drive a commercial vehicle only within the boundaries of Pennsylvania, INTRASTATE.

For both of the above you are required to enlarge your Medical Examiner's Certificate to 5 inches by 7 inches and make sure that all of the health care provider information is complete and legible and submit the medical examiner's certificate to PennDOT.

- c. **EI** – I drive a commercial vehicle both inside and outside the boundaries of Pennsylvania.
- d. **EA** – I drive a commercial vehicle only within the boundaries of Pennsylvania.

For both of the above, you DO NOT carry a Medical Exam Certificate. You are required to provide the completed DL-11CD form to Health Services. You will be given credit for MED999 meaning that you CANNOT drive a CMV vehicle for PPL.

**5.16 Driver Qualification File (refer to 49 FMCSR 391.51)**

**5.16.1 General Requirements: Driver Qualification File (DQF)**

<https://teams.sp.ppl.com/sites/TDI/DQF/SitePages/Home.aspx>

The Driver Qualification File (DQF) shall be kept current and stored in a secure location with controlled access. Regulators must have access to the DQF at the time of their visit.

**5.16.2 DQF Contents**

Attachment I is an itemized list PPL uses to document DQF completeness (see Attachment I).

**5.16.3 Accident Recording (refer to FMCSR 49 CFR 390.15)**

PPL shall maintain an Accident Register identifying:

- a. Each accident date
- b. City or town in which, or closest to, where the accident occurred, and the state where the accident took place
- c. Driver's name
- d. Number of injuries
- e. Number of fatalities
- f. Whether hazardous materials were released (other than fuel spilled from fuel tanks of motor vehicles involved in the accident)



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- g. Copies of all accident reports required by State or insurer

A record of each such accident must be recorded and maintained for at least three (3) years after the accident's occurrence. A copy of the accident report (i.e. the police report) must be accessible upon request.

**6.0 REFERENCES**

- 6.1 49 CFR Parts – Reference the PA State Laws**
- 6.2 67 PA Code (Chapter 231) – Interstate Motor Carrier Safety Requirements**
- 6.3 GP 101 – Drug and Alcohol Procedure**
- 6.4 CP 202 –Drug and Alcohol Policy**
- 6.5 GP 700 – Commercial Driver's License Reimbursement**
- 6.6 GP 505 – Employee Assistance Program**
- 6.7 MA 14-0130 – Memorandum of Agreement Between PPL and IBEW 1600**
- 6.8 67 PA Code §231.8: PA Code lists the additions or modifications to federal DOT definition**
- 6.9 PA State Laws – 67 PA Code § 231.7: PA Code Adopts portions of the Federal DOT Regulations (Volume 49 of Code of Federal Regulations) by reference. These parts include:**
  - a. Part 382 (relating to controlled substances and alcohol use, and testing).
  - b. Part 385 (relating to safety fitness procedures).
  - c. Part 390 (relating to Federal motor carrier safety regulations; general).
  - d. Part 391 (relating to qualifications of drivers and longer combination vehicle (LCV) driver instructors).
  - e. Part 392 (relating to driving of commercial motor vehicles).
  - f. Part 393 (relating to parts and accessories necessary for safe operation).
  - g. Part 395 (relating to hours of service of drivers).
  - h. Part 396 (relating to inspection, repair, and maintenance).

**7.0 REGULATORY REQUIREMENTS**

- 7.1 PPL is required to follow the 49 CFR Regulations and 67 Pennsylvania Code for all commercial motor vehicle operations.**



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### 8.0 SAFETY AND TRAINING

#### 8.1 Required Driver Training

Course Title	Course
CDL Classroom Basic	CD730A
CDL Classroom Air Brakes	CD730B
CDL Hands-On Training & Exam	CD731
CDL – Driver Physical	MED0XX
Commercial Driver's License	MST120
Intrastate Motor Carrier CBT	MST340
Single Multi-piece Rim Aware CBT	MST361
Drug and Alcohol CDL Holders CBT	MST471
CMV Entry Level Driver Training	S00442

#### 8.2 Required Training for CDL Driver Supervisors

Course Title	Course
Drug & Alcohol Supv Pt 1 CBT	MST478
Drug & Alcohol Supv Pt 2 CBT	MST479

#### 8.3 Required Training for DQF Administrators (TDI)

The DQF Administrators are required to be trained in the follow-in topics:

- CDL random drug testing
- CMV inspections
- Drug and alcohol testing programs, and hours of service



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### 9.0 DRUG AND ALCOHOL RANDOM TESTING COMPLIANCE AND EXPECTATIONS

#### 9.1 Drug and Alcohol Use Prohibition

All CDL drivers are covered by PPL's General Procedure 101 (Drug and Alcohol), Corporate Policy 202, and Memorandum of Agreement 14-0130 between PPL and IBEW Local 1600 (applicable to Union employees only).

All employees assigned a current CDL Qualification will be included in PPL's random Drug and Alcohol testing program. Additionally, these employees will be subjected to reasonable suspicion/for cause, return to duty, follow-up and post incident/accident testing.

Health Services manages the Drug and Alcohol testing program in PA. The results are received by Health Services. The CDL Qualification assignment and inclusion in the drug and alcohol pool is managed via computer programming.

All employees assigned to drive a commercial motor vehicle shall, as a condition of their employment and whenever called for, agree to submit to drug and alcohol testing procedures. Refusal to participate at any time will subject the employee to disciplinary actions listed in GP 101 and MA 14-0130 (applicable to Union employees only).

#### 9.2 Mandatory Referral

Mandatory referrals for Substance Abuse Professional (SAP) service are accomplished per requirements listed in GP 505, MA 14-0130 (applicable to Union employees only), and GP 101. When applicable, Health Services, upon receiving confirmation of a positive test results, will refer the employee to Employee Assistance Program (EAP) for completion of a mandatory treatment per the process detailed in GP 101 and MA 14-0130 (applicable to Union employees only).

#### 9.3 FMCSA Portal (Compliance and Expectations)

- 9.3.1 PPL shall use the DOT Safety and Fitness Electronic Records (SAFER) System or other resource as necessary to perform investigations.
- 9.3.2 The SAFER company profile provides an electronic record of a company's identification, size, commodity information, and safety record, including the safety rating (if any), a roadside out-of-service inspection summary, and crash information.
- 9.3.3 The SAFER system uses carrier information from existing government motor carrier safety data bases.

### 10.0 ATTACHMENTS

#### 10.1 Attachment I – DQF Checklist



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**10.2** Attachment II – Driver Application Letter

**10.3** Attachment III – Original Driver MVR

**10.4** Attachment IV – Original Affidavit SPH


**11.0 POINT OF CONTACTS**

**11.1** Manager level or equivalent in Health Services department

**11.2** Manager level of Training or equivalent in TD&I department

**12.0 RECORD RETENTION REQUIREMENTS**


**12.1** PPL's Manager level of Training or equivalent shall maintain DQF for each CDL driver for the duration of the driver's employment and for 3 years after the employment ends (391.51).

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### 13.0 REVISION HISTORY

<b>Prepared by:</b>	
	<b>Training Professionals</b>
	John Wirth & Keri Krasley
<b>Reviewed by:</b>	
	<b>Manager level or equivalent</b> – Health Services
	Janelle Keeney
	<b>Manager level of Training or equivalent</b> - TDI
	Patti Scaramuzzo
	<b>Manager of Safety or equivalent</b> - TDI
	Brain Matweecha
<b>Approved by:</b>	
	<b>Director</b> – Technical Development & Improvement
	<b>Paul D Ward</b>

Rev	Date	Revision Comments	Who
04	07/23/2018	Deleted redundant information and added plain English explanations throughout. Clarified responsibilities and removed outdated attachments.	Krasley/Wirth
03	05/20/2016	Updated Section 5.5.2 to clarify interstate vs intrastate for self-certification.	Jared Dyer
02	06/02/2015	Updated Section 5.1.2 to reference GP700.	
01	03/26/2014	Updated to reflect various changes to the regulation and to incorporate the roles and responsibilities in relation to the Driver Qualification File.	

 PPL Electric Utilities	<b>COMMERCIAL DRIVER'S LICENSE (CDL)  WORK INSTRUCTION PROCEDURE</b>	0000-000-PR-8026 Custom ID: SP 28 Revision: 04 Effective Date: 7/27/2018 Page 19 of 22
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00	07/01/2012	Converted from GSP to Electric Utilities Ownership.	
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## ATTACHMENT I

### Driver Qualification File Checklist

- ☐ Driver-specific application for employment (§391.21);
- ☐ Original motor vehicle record (MVR) requested from state(s) within 30 days of hire (§391.23); or SP28 Attachment III (Original Driver Motor Vehicle Record)
- ☐ Safety Performance History data from all former DOT-regulated employers for the 3 years prior to the application date or a record of a good faith effort. This form must be maintained in accordance with §391.53 and may be in a separate Driver Investigation History File or SP28 Attachment IV (Original Affidavit SPH) For drivers hired before October 30, 2004, the driver application letter from SP28 meets this requirement
- ☐ Photocopy of a CDL (§391.33(a)(1))
- ☐ Background investigations (§391.23)
- ☐ Medical exam certificate copy for all CMV drivers; or if applicable, documentation of any variance, exemption, or waiver from the physical qualification standards (§391.51(b)(7) and (§391.43(g))
  - For non-Mid-State medical exam certificate-Verification that medical examiner was listed on National Registry (§391.51(b)(9));
- ☐ Annual motor vehicle record (§391.25);
- ☐ Annual review of driving record (§391.25); and an annual list of violations (§391.27).

**These 2 questions must be answered for new CDL holders and employees new to a position requiring a CDL.**

1. Is the driver an electrician or other employee needing to drive a vehicle with a tank capacity greater than 119 gallons (N or X endorsement)?
  - a. YES - documentation of a road test must be included in the DQF. A copy of their driver's license does not meet the road test requirement under (§391.33(a)(1)).
  - b. NO – Driver's license is equivalent for this requirement
2. Has the driver had their CDL for less than 365 days?
  - a. YES - the JJ Keller "Entry-level driver training certificate" must be in the DQF (§380.509(b)).
  - b. NO - Driver's license is equivalent for this requirement



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	<b>Document</b>	<b>Regulation Reference</b>	<b>Person Responsible</b>	<b>Record System</b>
1	Initial employment application	§391.21	HR - Hiring	BrassRing
2	MVR from previous employer.	§391.23	HR - Hiring	Asurint
3	Road test for N or X Endorsement for tankers or road test exception	§391.33(a)(1)	TDI - Training	HRPR
4	Background Investigation	§391.23	HR Corp Security	Asurint
5	Annual MVR	§391.25	TDI - Training Corp Security	Asurint
6	Annual MVR review	§391.25	TDI - Training	DQF SharePoint*
7	Copy of Driver's license	§391.33(a)(1)	TDI - Training	HRPR – MST120* DQF SharePoint*
8	A med card or med card variance	§391.43(g)	Health Services TDI - Training	DQF SharePoint*
9	Entry-level driver training certificate for CDL (less than 365 days experience)	§380.509(b)	TDI - Training	HRPR – MST120* DQF SharePoint*
10	Original MVR DQF	§391.23	HR – Hiring Corp Security	Asurint
11	Annual list of violations	§391.27	TDI - Training Corp Security	Asurint
12	Accident report (if applicable)	§391.27	TDI - Training Corp Security	

\*It is possible to have credit for MST120 in HRPR and without having a copy of the license in DQF.

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## ATTACHMENT II

### Attachment II

#### **Driver Application for Employment Exemption Letter**

#### **Note to File**

#### **49 CFR 391.21 Driver Applications for Employment**

49 CFR 391.51 – General Requirements for Driver Qualification Files, PPL has adopted the following records retention process for maintaining (1) The driver's application for employment completed in accordance with § 391.21.

- (1) Employees entering a position requiring a Commercial Drivers Licenses (CDL) after 11/07/13 will have the DOT application for employment completed in accordance with § 391.21 maintained in the PPL Driver Qualification File.

NOTE: It is training managements understanding that the above note means that employees hired before 11/7/2013 will not have copies of their application for employment in their DQF.



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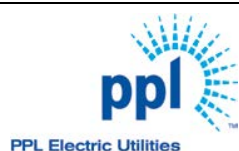
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## **1.0 PURPOSE /SCOPE**

- 1.1 The purpose of this procedure is to identify the necessary PPE (Personal Protective Equipment) required for use by PPL Electric Utilities employees. Personal protective equipment should not be used as a substitute for engineering, work practice, and/or administrative controls. Personal protective equipment should be used in conjunction with these controls to provide for employee safety and health in the workplace. Personal protective equipment includes all clothing and other work accessories designed to create a barrier against workplace hazards. The basic element of any program for PPE should be an in-depth evaluation of the equipment needed to protect against the hazards at the workplace. Management dedicated to the safety and health of employees should use that evaluation to set a standard operating procedure for personnel, and then train employees on the protective limitations of PPE, and on its proper use and maintenance.
- 1.2 Using PPE requires hazard awareness and training on the part of the user. Employees must be aware that the equipment does not eliminate the hazard. If the equipment fails, exposure will occur. To reduce the possibility of failure, equipment must be properly fitted and maintained in a clean and serviceable condition.
- 1.3 Selection of the proper personal protective equipment for a job is important. Employees must understand the equipment's purpose and its limitations. The equipment must not be altered or removed even though an employee may find it uncomfortable. In fact, sometimes equipment may be uncomfortable simply because it does not fit properly.

## **2.0 RESPONSIBILITY**

- 2.1 Management shall assure an assessment (e.g. Tailboard) of the workplace to determine if any hazards are present which necessitates the use of PPE. Management shall assure that all employees have available the proper Personal Protective Equipment (PPE) and this equipment is used.
- 2.2 Only approved PPE shall be used and all PPE shall be approved by the EU Tool and Equipment Committee.
- 2.3 All employees are responsible to follow requirements in this procedure and to abide by rules and training requiring the use of PPE.
- 2.4 All supervisors are required to assure their employees follow requirements of this procedure.
- 2.5 Safety Operations shall be responsible to maintain and update this procedure.



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### **3.0 APPLICABILITY**

- 3.1 This procedure identifies the necessary PPE required for use by PPL Electric Utility employees.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 ANSI -- American National Standards Institute
- 4.2 OSHA -- Occupational Safety and Health Act
- 4.3 ASTM -- American Standard Testing Materials
- 4.4 Electrical Protective Equipment Class II
- 4.5 Electrical Protective Equipment Class O

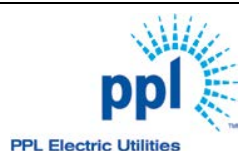
### **5.0 MAIN BODY**

#### **5.1 GENERAL REQUIREMENTS**

- 5.1.1 Protective equipment, including personal protective equipment for eyes, face, head and extremities, protective clothing and respiratory devices shall be provided, used and maintained in a sanitary and reliable condition where it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
- 5.1.2 Where employees provide their own protective equipment (i.e. glasses, shoes), Management shall be responsible to assure its adequacy, including proper maintenance and sanitation of such equipment.
- 5.1.3 All personal protective equipment shall be of safe design and construction for the work to be performed.

#### **5.2 HAZARD ASSESSMENT AND EQUIPMENT SELECTION**

- 5.2.1 Management shall assure assessment of the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall select and have each affected employee use the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).
- 5.2.2 Communicate selection decisions to each affected employee.



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- 5.2.3 Select PPE that properly fits each affected employee.
- 5.2.4 Defective or damaged personal protective equipment shall not be used and shall be removed from service.

**5.3 EYE AND FACE PROTECTION**

**5.3.1 General Requirements**

Management shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

**5.3.2 Selection**

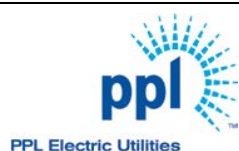
Management shall base the selection of the appropriate eye and face protection on an evaluation of the performance characteristics of the eye and face protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. ([Form 4994 \(Job Hazard Analysis\)](#) or equivalent)

- 5.3.3 Management shall monitor that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g. clip-on or slide-on side shields) meeting the requirements of this section are acceptable.

- 5.3.4 Management shall monitor that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or wears eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

- 5.3.5 Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.

- 5.3.6 Management shall monitor that each affected employee uses equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. The following is a listing of appropriate shade numbers for various operations.

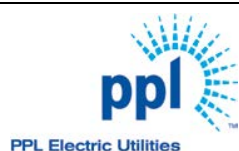


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<b>FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY</b>			
MINIMUM (*)			
Operations	Electrode Size 1/32 in.	Arc current Shade	Protective
Shielded metal Arc welding	less than 3	less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	more than 8	250-550	11
Gas metal arc Welding and Flux cored Arc welding	less than 60	.....8	
	60-160	.....10	
	160-250	.....10	
	250-500	.....10	
Gas Tungsten Arc welding	less than 50	.....7	
	50-150	.....8	
	150-500	.....10	
Air carbon	(light) .....	Less than 500	..... 10
Arc cutting	(heavy) .....	500-1000	..... 11
Plasma arc welding	less than 20	... .6	
	20-100	.....8	
	100-400	.....10	
	400-800	.....11	
Plasma arc Cutting	(light)(**) .....	less than 300	... .8
	medium)(**) .....	300-400	.....9
	(heavy)(**) .....	400-800	.....10
Torch brazing	.....	3	
Torch Soldering	.....	2	
Carbon arc welding	.....	14	

<b>Filter lenses for Protection Against Radiant Energy</b>			
Minimum (*)			
Operations	Plate thickness-inches	Plate thickness-mm	Protective Shade
<b>Gas Welding:</b>			
Light	Under 1/8 .....	Under 3.2	..... 4
Medium	1/8 to 1/2 .....	3.2 to 12.7	..... 5
Heavy	Over 1/2.....	Over 12.7	..... . 6
<b>Oxygen cutting:</b>			
Light	Under 1 .....	Under 25	..... 3
Medium	1 to 6 .....	25 to 150	..... 4
Heavy	Over 6 .....	Over 150	... .. 5
<b>Footnote (*)</b> As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade that gives sufficient view of the weld zone without going below the minimum. In oxy-fuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation. <b>Footnote(**)</b> These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workplace.			



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**5.4 OCCUPATIONAL FOOT PROTECTION**

**5.4.1 General Requirements**

Management shall monitor that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards.

**5.4.2 Selection**

Management shall base the selection of the appropriate foot protection on an evaluation of the performance characteristics of the foot protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).

**5.5 HAND PROTECTION**

**5.5.1 General Requirements**

Management shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes.

**5.5.2 Selection**

Management shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).

**5.5.3** Reference current approved tool and equipment listing for list of all hand protection available.

**5.6 HEAD PROTECTION**

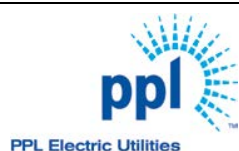
**5.6.1 General Requirements**

Management shall monitor that each employee wears a protective helmet when working in areas where there is a potential head injury from impact, falling or flying objects or from electrical shock and burns.

**5.6.2 Selection**

Management shall base the selection of the appropriate head protection on an evaluation of the performance characteristics of the head protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Form 4994 or equivalent)





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5.6.3 Management shall monitor that protective helmet designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head.

5.6.4 All protective helmets shall be worn according to manufacturer's requirements.

**5.7 HEARING PROTECTION**

**5.7.1 General Requirements**

Hearing protective devices shall be provided and used in areas and when performing tasks where the noise level constantly exceeds 85 DBA, by hazard assessment.

**5.7.2 Selection**

Management shall base the selection of the appropriate hearing protection on an evaluation of the performance characteristics of the hearing protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Follow Federal requirements)

5.7.3 Ear protective devices inserted in the ear shall be worn in a manner consistent with manufacturer's instructions.

**5.8 PERSONAL PROTECTIVE ELECTRICAL RUBBER EQUIPMENT**

**5.8.1 General Requirements and Selection**

Management shall base the selection of the appropriate electrical protection equipment on an evaluation of the performance characteristics of the electrical protection equipment relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).

5.8.2 Electrical Protective Equipment shall be maintained and stored in a safe, reliable condition.

5.8.3 Electrical Protective Equipment shall be subjected to periodic electrical tests.

5.8.4 Electrical Protective Equipment shall be inspected for damage before each day's use, and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test along with the inspection.

5.8.5 Electrical Protective Equipment found to have defects that might affect its insulating properties shall be removed from service and returned for testing.



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**5.9 RESPIRATORY PROTECTION**

**5.9.1 General Requirements**

Any employee requiring respirator protection shall meet the requirements of [Safety Procedure #21 \(Respiratory Protection\)](#).

**5.9.2 Selection**

Management shall base the selection of the appropriate respirator protection on an evaluation of the performance characteristics of the respirator protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).

**5.10 PERSONAL PROTECTIVE CLOTHING**

**5.10.1 General Requirements**

Personal Protective clothing, are items used by an employee to protect against a specific hazard of the job. Examples of employee protective clothing include, but are not limited to: welding leathers, disposable suits, and rubber.

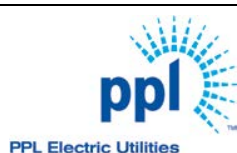
**5.10.2 Selection**

Management shall base the selection of the appropriate personal protective clothing on and evaluation of the performance characteristics of the personal protective clothing relative to the task(s) to be performed, conditions present, duration of the use and the hazards, potential hazards identified and safety rules. (Reference Attachment A, B, C or [Form 4994 \(Job Hazard Analysis\)](#) or equivalent).

5.10.3 Reference current approved Tool & Equipment Manual for list of all personal protective clothing available.

**6.0 REFERENCES**

- 6.1 PPL Electric Utilities Safety Rule Book
- 6.2 Specific Manufacturer's Requirements
- 6.3 ANSI Standard Z.87.1 Eye Protective Equipment
- 6.4 ANSI Standard Z89.1 Head Protection & Z89.2 Head Prot. for Electrical Workers
- 6.6 ASTM F 2412 and 2413



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## **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 1910.132 \(Personal Protective Equipment\)](#)
- 7.2 [OSHA 1910.95 \(Occupational Noise Exposure\)](#)
- 7.3 [OSHA 1926.95 \(Criteria for wearing PPE\)](#)

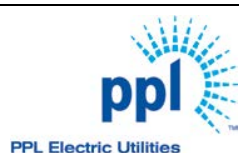
## **8.0 TRAINING / SAFETY**

- 8.1 Each affected employee shall be trained to know at least the following:
  - a. When PPE is necessary.
  - b. What PPE is necessary?
  - c. How to properly select, don, doff, adjust and wear PPE.
  - d. The limitations of the PPE.
  - e. The proper care, maintenance, storage, useful life and disposal of the PPE.
- 8.2 Each affected employee shall demonstrate an understanding of the training specified in this procedure and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.
- 8.3 When Management has reason to believe that any affected employee who has already been trained does not have the understanding and skill required the employee shall be retrained. Circumstances where retraining is required include, but are not limited, situations where:
  - a. Changes in the workplace render previous training obsolete.
  - b. Changes in the types of PPE to be used render previous training obsolete.
  - c. Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.
  - d. Management shall verify that each affected employee has received and understood the required training through written certification that contains the name of each employee trained, the date(s) of training and identifies the subject of the certification.

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS**

- 10.1 Attachment A -PPE Hazard Assessment Guideline
- 10.2 Attachment B –Sample 1 - PPE Hazard Assessment Form
- 10.3 Attachment C –Sample 2 - PPE Hazard Assessment Form
- 10.3 [Form 4994 - Job Hazard Analysis](#)



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## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with OSHA and ANSI standards related to personal protective equipment.			

Rev	00	Date	07/31/2012	Effective	07/31/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**ATTACHMENT A - PPE HAZARD ASSESSMENT GUIDELINE**

This appendix is intended to provide compliance assistance for implementing requirements for a hazard assessment and the selection of personal protective equipment.

1. **CONTROLLING HAZARDS:** PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.
2. **ASSESSMENT AND SELECTION:** It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the supervisor to exercise common sense and appropriate expertise to accomplish these tasks.
3. **ASSESSMENT GUIDELINES:** In order to assess the need for PPE the following steps should be taken:
  - A. **Survey:** Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:
    - Impact
    - Penetration
    - Compression (roll-over)
    - Chemical
    - Heat
    - Harmful dust
    - Light (optional) radiation
    - Noise
    - Electrical
  - B. During the walk-through survey, line management should observe:
    - Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects.
    - Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.
    - Types of chemical exposures.
    - Sources of harmful dust.
    - Sources of light radiation; i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.
    - Sources of falling objects or potential for dropping objects.
    - Sources of sharp objects that might pierce the feet or cut the hands.
    - Sources of rolling or pinching objects that could crush the feet.
    - Layout of workplace and location of co-workers.
    - Any electrical hazards.

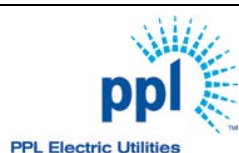


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In addition, injury/accident data should be reviewed to help identify problem areas and/or exposures.

- C. Organize data: Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.
  - D. Analyze data: Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.
4. **SELECTION GUIDELINES:** After completion of the procedures for selection of protective equipment is to:
- A. Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.
  - B. Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment.
  - C. Select the protective equipment which ensures a level of protection greater than the minimum required protecting employees from the hazards.
  - D. Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.
5. **FITTING THE DEVICE:** Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.
6. **DEVICES WITH ADJUSTABLE FEATURES:** Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chinstrap may be necessary to keep the helmet on an employee's head. (Chinstraps should break at a reasonably low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.
7. **REASSESSMENT OF HAZARDS:** It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and evaluating new



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equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

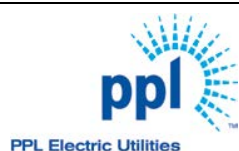
8. **SELECTION CHART GUIDELINES FOR EYE AND FACE PROTECTION:** Some occupations (not a complete list) for which eye protection should be routinely considered are: journeyman, electricians, machinists, mechanics, welders, laborers, and operators. The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

<b>SOURCE</b>	<b>ASSESSMENT OF HAZARD</b>	<b>PROTECTION</b>
IMPACT – chipping	flying fragments	spectacles with side shield

**NOTES TO EYE AND FACE PROTECTION SELECTION:**

- A. Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
- B. Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- C. Face shields should only be worn over primary eye protection (spectacles or goggles).
- D. As required by the standard, filter lenses must meet the requirements for shade designations in 1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
- E. As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
- F. Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- G. Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- H. Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.





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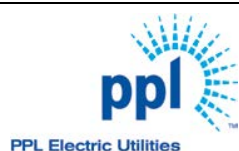
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- I. Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).
  - J. Non-side shield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."
  - K. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
  - L. Protection from light radiation is directly related to filter lens density. See note 4. Select the darkest shade that allows task performance.
9. **SELECTION GUIDELINES FOR HEAD PROTECTION:** All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. When selecting head protection, knowledge of potential electrical hazards is important. The three hard hat classes are based on the level of protection they provide from electrical hazards. Those classes are:
- Class G (General) hard hats are rated for 2,200 volts
  - Class E (Electrical) hard hats are rated for 20,000 volts
  - Class C (Conductive) hard hats do not offer electrical protection

***PPL Electric Utility employees wear Class E (Electrical) hard hats that are rated for 20,000 volts.*** Class E hard hats provide the highest protection from electric shock and burn. Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors. Some examples of occupations for which head protection should be routinely considered are: journeyman, electricians, linemen, mechanics, welders, laborers, material handlers, and warehouse personal.

10. **SELECTION GUIDELINES FOR FOOT PROTECTION:** Safety shoes and boots which meet the ASTM F2413 Standard provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate. Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over on an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal, etc., could be stepped on by employees causing a foot injury. Some occupations (not a complete list) for which foot protection should be routinely considered are: stock clerks, electricians, machinists, mechanics, operators, welders, laborers, material handlers, warehouse personnel.





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11. **SELECTION GUIDELINES FOR HAND PROTECTION:** Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. OSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:
- A. As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types.
  - B. The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

With respect to selection of gloves for protection against chemical hazards:

- A. The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects.
  - B. Generally, any "chemical resistant" glove can be used for dry powders.
  - C. For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials.
  - D. Employees must be able to remove the gloves in such a manner as to prevent skin contamination.
12. **CLEANING AND MAINTENANCE:** It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

For the purposes of compliance, PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection. It is also important to ensure that contaminated PPE that cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.



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**ATTACHMENT B - PPE HAZARD ASSESSMENT FORM (PART I)**

**PERSONAL PROTECTIVE EQUIPMENT HAZARD ASSESSMENT FORM (PART I)**

Per OSHA 29 CFR 1910.132 "Subpart I"

**INSTRUCTIONS:** Print this form and keep the original for future hazard assessments. Use a copy as a guide for your walk-through survey. It will help you identify the hazards in the work area. Once you've completed the form you are ready to select the appropriate PPE.

AREA ASSESSED: \_\_\_\_\_ JOB CLASSIFICATION: \_\_\_\_\_  
ASSESSOR \_\_\_\_\_ DATE: \_\_\_\_\_

**A. HEAD HAZARDS:** Tasks that can present head hazards include: Working below other workers who are using tools, materials, or other items which can fall: Working on or near energized electrical equipment: Working with or near chemicals: Working under, or near equipment or processes which might cause materials, objects, or chemicals to fall or otherwise strike a worker's head.

*Circle the appropriate word for each hazard:*

Burn Yes No Description of hazard(s) \_\_\_\_\_  
Chemical Splash Yes No \_\_\_\_\_  
Electrical Shock Yes No \_\_\_\_\_  
Impact Yes No \_\_\_\_\_  
Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section A in Part II of this form)

**B. EYE HAZARDS:** Tasks that can cause eye hazards include: Working with or near chemicals: Chipping: Grinding: Sanding: Welding and/or working with molten metals: Working in dusty environments: Woodworking: Furnace operation: Operation of stationary or hand-held power tools: Using compressed air or gasses: Working beneath equipment or processes while looking up.

*Circle the appropriate word for each hazard:*

Chemicals Yes No Description of hazard(s) \_\_\_\_\_  
Dust, Fibers, Flyings Yes No \_\_\_\_\_  
Heat Yes No \_\_\_\_\_  
Impact Yes No \_\_\_\_\_  
Light / Radiation Yes No \_\_\_\_\_  
Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section B in Part II of this form)

**C. HAND HAZARDS:** Tasks that can present hand hazards include: Cutting material: Working with chemicals: Working with hot/cold objects: Handling rough, sharp, splintered material.

*Circle the appropriate word for each hazard:*

Thermal extremes Yes No Description of hazard(s) \_\_\_\_\_  
Chemicals Yes No \_\_\_\_\_  
Cut, Abrasion Yes No \_\_\_\_\_  
Puncture Yes No \_\_\_\_\_  
Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section C in Part II of this form)

**D. FOOT HAZARDS:** Tasks that can cause foot hazards include: Carrying or handling materials that can be dripped: Performing manual materials handling tasks: Working with chemicals: Working in environments with sharp objects on floor: Working with machinery that can drop objects on workers' foot: Handling extremely heavy objects.

*Check the appropriate word for each hazard:*

Chemicals Yes No Description of hazard(s) \_\_\_\_\_  
Crushing Yes No \_\_\_\_\_  
Impact Yes No \_\_\_\_\_  
Puncture Yes No \_\_\_\_\_  
Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section D in Part II of this form)

**E. HEARING HAZARDS:** Tasks that can present a hearing hazard include: Working around large equipment/vehicles, operation of mechanical tools (jackhammer, pneumatic presses, air compressors), work inside a power plant and working in a machine shop.

*Check the appropriate word for each hazard:*



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Vehicles Yes No Description of hazard(s) \_\_\_\_\_

Equipment Yes No \_\_\_\_\_

Tools Yes No \_\_\_\_\_

Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section E in Part II of this form)

**F. RESPIRATOR HAZARDS:** Tasks that can present a respiratory hazard include: Working around chemicals, working in confined spaces or working in an environment in which dusts, coal or foreign materials are airborne and can be inhaled.

*Check the appropriate word for each hazard:*

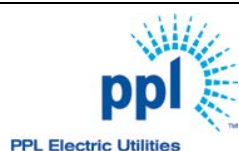
Chemicals Yes No Description of hazard(s) \_\_\_\_\_

Confined Space Yes No \_\_\_\_\_

Dusty Environment Yes No \_\_\_\_\_

Other (describe) \_\_\_\_\_ N/A

(Transfer this data to section F in Part II of this form)



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**CERTIFICATION OF HAZARD ASSESSMENT (PART II)**

**INSTRUCTIONS:** Transfer information from Part I to the appropriate sections below. (1) Familiarize yourself with the potential hazards and the types of PPE that are available to protect against the hazards. (2) Consider the magnitude and other characteristics of the hazard(s) and environment; such as impact velocities, masses, projectile shape, strength of chemical compositions, concentrations of dusts, mists, gasses, fumes, radiant energy intensities, etc. (3) Select PPE that ensures a greater level of protection than the minimum required to protect workers from the hazards. Specify PPE by evaluative criteria, and/or manufacturer, model, size, and other applicable features. (4) Fit the PPE to the worker, train the worker in PPE use and care. Ensure workers are aware of all limitations, warning labels, and other characteristics of the PPE. Instruct employees on who to contact if they have problems or questions pertaining to their PPE.

BASED ON THE HAZARD ASSESSMENT FOR \_\_\_\_\_ THE FOLLOWING PPE IS REQUIRED:  
 (Job Classification)

**A. HEAD HAZARDS: JOB / TASK REQUIRED PPE**


**B. EYE HAZARDS JOB / TASK REQUIRED PPE**


**C. HAND HAZARDS JOB / TASK REQUIRED PPE**



**D. FOOT HAZARDS JOB / TASK REQUIRED PPE**


**E. HEARING HAZARDS JOB / TASK REQUIRED PPE**


**D. RESPIRATORY HAZARDS JOB / TASK REQUIRED PPE**


Certification: I certify that this Hazard Evaluation was conducted as described above, in a good-faith effort to comply with the applicable Hazard Assessment portions of 29 CFR 1910.132.

Signed \_\_\_\_\_ Date \_\_\_\_\_

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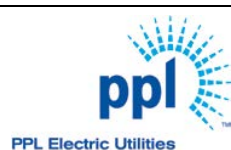
### ATTACHMENT C - PPE - Hazard Assessment Survey Form

<b>Completed by:</b> _____	<b>Phone Number:</b> _____
<b>Signature:</b> _____	<b>Date:</b> _____
<b>Title:</b> _____	

Location: _____	Building: _____	Department/Area: _____
Procedure(s) being assessed: _____		

Are personnel exposed to hazards from:	Eye and Face Protection			
	No	Yes	Procedure/Activity	PPE Provided
Flying Particles				
Molten Metal				
Liquid Chemicals				
Acids				
Caustic Liquids				
Chemical Gases/Vapors				
Injurious Light Radiation				
Other:				

	Hand and Body Dermal Protection			
	No	Yes	Procedure/Activity	PPE Provided
Chemical Skin Absorption				
Severe Cuts or Lacerations				
Severe Abrasions				
Punctures				
Chemical Burns				
Thermal Burns				
Harmful Temperature Extremes				
Other:				



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**Head Protection**

	No	Yes	Procedure/Activity	PPE Provided
Falling Objects				
Electrical Hazards				
Other:				

**Foot Protection**

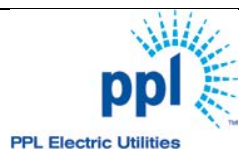
Are personnel exposed to hazards from:	No	Yes	Procedure/Activity	PPE Provided
Falling or rolling objects				
Objects which may pierce the sole				
Electrical hazards				
Other:				

**Full Body or Other**

	No	Yes	Procedure/Activity	PPE Provided
Ionizing or Non-ionizing Radiation				
Electrical				
Noise				
Harmful Bacteria or Viruses				
Other:				

**Respiratory (Apply NIOSH Decision Logic)**

	No	Yes	Procedure/Activity	PPE Provided
Particulate (Identify Which)				
Organic Vapor (Identify Which)				
Metal Fumes				
Gases (Identify Which)				
Other:				



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### **1.0 PURPOSE/SCOPE**

- 1.1 A Job Safety Analysis (JSA) is a process by which employees, prior to performing a task; identify steps necessary to complete a task, potential hazards associated with each step, and methods to avoid/control the hazards. The steps, hazards and hazard avoidance/control methods are listed in a document known as a JSA worksheet. The worksheet is then reviewed during tailboard conferences so that the proper action is taken to eliminate or control the hazards.

### **2.0 RESPONSIBILITY**

- 2.1 Management is responsible to determine the criteria (schedule, personnel, etc.) used for the development and completion of JSA's within their department. This responsibility also encompasses the review and approval of JSA's for implementation.
- 2.2 Supervisors are responsible to identify and prioritize tasks for JSA development. Included in this responsibility is the interaction necessary with departmental management for the allocation of resources. In addition, local management has the responsibility to assure JSA's (as available), are used as part of the normal job planning process, to include tailboards.
- 2.3 Each employee will be responsible to review the JSA (as available) for the task they will be performing. As the need arises, experienced employees will also be asked to participate in the development of JSA's.
- 2.4 Safety Operations is responsible to assure the database is kept current from a technology standpoint. In addition, Safety Professional will participate, when required, to ensure that hazard avoidance/control measures applicable to OSHA regulations be integrated into the JSA's.

### **3.0 APPLICABILITY**

- 3.1 JSA's (as available), are used as part of the normal job planning process, to include tailboards.

### **4.0 TERMS AND DEFINITIONS – N/A**





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### **5.0 MAIN BODY**

- 5.1 JSA represents a policy and commitment that a safe work environment will be provided to all employees. The JSA contributes to the creation and maintenance of a safe work environment. It is a significant step to ensure that employees identify and remove hazards within their work scope. It reduces the potential for accidents; it ultimately reduces the potential of injuries to employees.
- 5.2 Utilization of JSA's:
- 5.2.1 JSA's should be used during the following situations:
- a) Tailboards
    - JSA's should be used for crew briefings at job-site tailboards. The job procedures and, if available for the task, the JSA should be reviewed to inform employees of potential and actual hazards associated with the work to be performed. The JSA is discussed according to the specific job conditions that exist at the time the work is to be performed. Current conditions may require the JSA to be customized (i.e., add additional controls to a particular step in the task) to a certain extent to cope with current circumstances.
  - b) Job Planning
    - Jobs are planned using JSA information to ensure proper equipment, tools, and materials are available to assist employees in addressing job hazards.
- 5.3 How does JSA work at PPL Electric Utilities?
- 5.3.1 Local management and concerned employees identify tasks to be performed. Local management then makes a recommendation to departmental management for the development of a JSA. This recommendation is forwarded to departmental management with proposed resources, developmental schedule and prioritization of the JSA.
- 5.3.2 Departmental management will then review the results of the development, approves, and assign resources to complete the JSA.
- 5.3.3 Criteria to accept and prioritize tasks for JSA are as follows:



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- a) High risk tasks
- b) Tasks associated with accidents resulting in disabilities
- c) New tasks or tasks with new materials, tools and/or equipment
- d) History of high accident rate

5.3.4 Risk is assessed by evaluating severity, exposure, and probability of accident potential

- a) Severity - potential for serious injury that can occur if the job is done incorrectly
- b) Exposure - what is the normal number of people who perform the job and how frequently is the job performed
- c) Probability - consider the number of hazards associated with the job, complexity and difficulty.

5.3.5 People assigned to complete JSA's must:

- a) Have adequate job experience at performing the task for which the JSA is being done
- b) If working as a team, must assure that all the members give input for consideration
- c) Understand the Safety Rules and Procedures relevant to the task being analyzed

5.4 JSA's can be obtained from a computer database and printed locally. They should be included with the work package and reviewed prior to the start of work at the job site. The person responsible for the work at the job site should review the JSA with the individuals who will be performing the task.

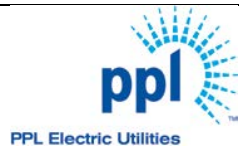
5.4.1 The discussion should follow these steps:

- a) Task steps
- b) Hazards associated with each step
- c) How hazards will be eliminated or controlled
- d) Any side effects from the attempt to eliminate or control the hazard
- e) Adjustments required due to any side effects of controlling the hazard

When the job is completed the JSA is filed as part of the work package.

5.5 Suggested steps to modifying a JSA:

5.5.1 If modifications are required to the core JSA statements, the revisions should be submitted to local management



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5.5.2 Management will ensure appropriate changes are made.  
Suggested steps to modifying a JSA:

- a) If modifications are required to the core JSA statements, the revisions should be submitted to local management
- b) Management will ensure appropriate changes are made
- c) The revised JSA is submitted to Safety Operations for input to the master JSA database.

5.6 Developing a Job Safety Analysis

5.6.1 Resources/Materials needed to conduct a JSA include:

- a) Procedures applicable to performing the task
- b) PPL Electric Utilities Safety Rule Book
- c) Applicable Procedures
- d) Accident history related to the task
- e) Any root cause analysis reports related to the task
- f) Blank JSA forms

5.7 JSA is a four-step process:

5.7.1 Identify the task to be analyzed.

5.7.2 List the steps performed to complete the task. Job experts discuss the steps involved in completing the task then list them in the column labeled SEQUENCE OF BASIC JOB STEPS. These steps:

- a) Should be basic items required to complete the task and not every detailed motion.
- b) Write the steps on a flip chart or white board in the sequence they are most efficiently performed under usual conditions.
- c) Use an action word to describe the step.
- d) Steps indicate what is done not how it is done.
- e) The number of steps in a task can normally be outlined to between 10 and 15 steps; more than 15 steps normally indicate the need for a second task.
- f) Transfer the data to the JSA form after consensus is reached on the Identify and list hazards associated with each step by evaluating effects of equipment, the environment, and what a person must do in that step. Remember that a hazard is an existing or potential condition that can result in death, injury, property damage or other losses by interacting with equipment, elements in the environment, and/or people.



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- 5.7.3 Hazards are controlled or eliminated through engineering or administrative controls, or through the use of personal protective equipment.
- 5.7.4 The above control approaches eliminate the hazard, create a barrier to the hazard, substitute previous processes, or utilize equipment that blocks personal contact with the existing or potential hazard.
- 5.7.5 Engineering controls include equipment designed to eliminate hazards; i.e., using ventilators to eliminate the build-up of toxins in the air of a confined space.
  - a) Task steps and sequence.
- 5.7.6 Administrative controls are procedures or policies that include time of exposure and training. i.e., rotating personnel to eliminate period of exposure.
- 5.7.7 Personal protective equipment does not eliminate the hazard but protects the individual should contact be made with the hazard, i.e., rubber protective equipment, SCBA's, etc.
- 5.7.8 Your JSA is now complete and ready for the next steps, which are:
  - a) Review and approval by management.
  - b) Enter into the database by Environmental Health & Safety
- 5.8 Job Safety Analysis Database
  - 5.8.1 Retrieving and using JSA information:
    - a) Obtain access to retrieve JSA's from the database
    - b) Locally print the JSA for job planning, tailboards, training, or root cause analysis
    - c) If necessary, modify the JSA according to the job requirements
    - d) Review and apply any necessary JSA recommendations
  - 5.8.2 Modifying an existing JSA as an official record:
    - a) Write down the general steps that must be modified.  
NOTE: modification for official record should only pertain to major and general steps within the JSA, and not for specific on-site details.



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- b) These must be completed in the specific site JSA as an addition to the general steps, but since these may vary from job to job, they should not become part of the official (general steps) requirements of a JSA.
- c) Management must first approve changes to an existing JSA
- d) Submit approved changes to Environmental Health & Safety
- e) Changes will be reflected in the "Request JSA" database application

### **5.8.3 Modifying an existing JSA as an official record:**

- a) Write down the general steps that must be modified  
NOTE: modification for official record should only pertain to major and general steps within the JSA, and not for specific on-site details. These must be completed in the specific site JSA as an addition to the general steps, but since these may vary from job to job, they should not become part of the official (general steps) requirements of a JSA.
- b) Management must first approve changes to an existing JSA
- c) Submit approved changes to Safety Operations.
- d) Upload revised JSA on to the department's SharePoint site.

## **6.0 REFERENCES**


- 6.1 National Safety Council, Job Safety Analysis Program
- 6.2. OSHA Job Hazard Safety Analysis # VT01572, VT01752

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA Job Hazard Safety Analysis

## **8.0 TRAINING / SAFETY**

- 8.1 Training courses incorporate the contents of JSA's into the curriculum to insure employees are informed of the safest approach when they first learn to accomplish a task.
- 8.2 Root Cause Analysis
  - 8.2.1 Should an accident occur, it is recommended that the JSA is used as part of the root cause analysis process to determine causes and corrective actions.

 <p>PPL Electric Utilities</p>	<p align="center"><b>SP 30</b>  <b>SAFETY PROCEDURE</b>  <b>JOB SAFETY ANALYSIS</b></p>	<p>0000-000-PR-8028  Custom ID: SP 30  Revision: 01  Effective Date: 07/25/2017  Page 8 of 8</p>
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## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS – N/A

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	5/23/2017	Effective	05/25/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Converted links to the new SharePoint.			

Rev	00	Date	07/25/2012	Effective	07/25/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



# **SP 31** **SAFETY PROCEDURE** **INCIDENT REPORTING & ANALYSIS** **PROCESS**

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## **1.0 PURPOSE/SCOPE**

- 1.1. The purpose of this Safety Procedure is to ensure all **safety related events** are reported properly and consistently across PPL as well as to ensure correct recordability status and complete an effective event analysis.

## **2.0 RESPONSIBILITY**

### **2.1 Employee**

- 2.1.1 Employees shall report to their supervisor, all injury accidents, motor vehicle accidents, property damage, and near miss accidents, as soon as reasonably possibly but in no event later than the end of the shift.
- 2.1.2 Employee shall inform supervisor of any treatment occurrence.
- 2.1.3 Employee shall assist in any related follow-up event analysis.

### **2.2 Supervisor/Manager**

- 2.2.1 When employee complains of pain, ask employee if they would like a visit from Occupational Athletics (OA) Trainer or Panel Physician.
  - 2.2.1.1 If employee chooses OA Trainer, supervisor will contact OA trainer.



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- 2.2.1.2 If employee chooses to be seen by a Panel Physician, OA trainer will not apply first aid treatment, stretches, and exercises while the employee is under a doctor's care.
- 2.2.2 If employee visits Panel Physician, provide appropriate incident forms to employee (Refer to Main Body in Section 5 of this procedure)
- 2.2.2 Accompany the employee on the *first visit* to PPL Panel Physician or ER.
- For *non-emergencies*, a supervisor or manager may take an injured employee to the doctor or hospital. Examples of such may include (but not limited to): minor pain or discomfort, sprains, strains, contusion, or bruises.
  - For *medical emergencies*, an ambulance must be called to the scene for transporting the employee to a medical facility. Medical emergencies may include (but not limited to): contact with energized facilities, loss of consciousness, or head injuries.
- Supervisors must use good judgment and be prepared to support the transport if conditions restrict ambulance access to the work area (i.e., right of way, rural areas, rough terrain, etc.)
- 2.2.3 Ensure all event information is input into CCATS.  
Note: Supervisor shall use [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) as a guide for asking employee questions before entering the information into CCATS.
- 2.2.4 Notify appropriate company personnel. For example: Health Services, and Corporate Security if appropriate.
- 2.2.5 Conduct an event analysis.
- 2.2.6 Follow up with event employee on status of injury/illness.
- 2.2.7 Ensure CCATS incident is reviewed, approved and closed.





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**2.3 Occupational Health Nurse**

- 2.3.1 Receives the following completed information from event employee's supervisor/manager:
  - a. Workers Compensation Notification Form (Form 5278)
  - b. Medical Release (Return to Work – Post Work Injury/Illness Claim) [Form 5433 - MEDICAL RELEASE](#) or equivalent)
- 2.3.2 Forward all appropriate completed forms to Safety & Health Representative.
- 2.3.3 Communicate with Supervisor/Manager and safety professional regarding employee's medical status pertaining to employee's visit(s) to PPL Panel Physician/ER.
- 2.3.4 Health Services will notify the regional Steno/Clerk of new claim. The PPL Steno/Clerk will call or fax information to the Workers' Compensation carrier. After notification is submitted, receives "Workers Compensation – First Report of Injury or Illness" and loss report with claim number attached.

**2.4 Safety Operations Representative**

- 2.4.1 Responsible to ensure that the process is applied as intended.
- 2.4.2 Safety Professionals will support the event analysis and assist with the process when requested.
- 2.4.3 Populate the Injury/Illness Consequence in CCATS, and revise as necessary. Revisions include: 1) ensuring the information meets the OSHA definition of recordable within seven (7) days of treatment that triggers OSHA recordability, 2) uploading medical documents into the Injury/Illness consequence.
- 2.4.4 Communicate recordability status and changes to Line Management.
- 2.4.5 Ensure compliance with OSHA recordkeeping standard.
  - a. Each month submit completed [Form 5053 - Reason\(s\) for Determining Non-OSHA Recordability](#) for cases in which Event is deemed not work related (non-occupational). Follow the process on the bottom of the form.



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- b. Form 5053 statements must read: “Employee state .... Employee (was / was not) evaluated by (panel / personal) medical provider. Employee (received / did not receive) medical treatment meeting the OSHA recordable threshold. Injury is not deemed work-related for the following reason(s): ...“
  - c. Review these events against the quarterly ESIS “Active/Open” cases with Health Services.
  - d. When an event changes from OSHA Recordable to Non-OSHA Recordable, strike those cases off the log (on the Injury/Illness Consequence).
- 2.4.6 Contact OSHA, by phone –
- Within eight (8) hours of all work-related fatalities;
  - Within twenty-four (24) hours of all work-related: inpatient hospitalizations, amputations, losses of an eye.
- 2.4.7 Contact the Transmission System Operator (TCC) or Distribution System Operator (DCC) for events that meet the reporting criteria up to the Public Utility Commission (PUC). Refer to: [SOP 018 Injury Notification Procedure](#)
- 2.5 **CAPCO (Corrective Action Program Coordinator)**
- 2.5.1 Assist the investigation lead with the event analysis processes to facilitate the determination of the root causes and to maintain consistency within the process.
- 2.5.2 Ensure the integrity of the event reporting and analysis process.
- 2.5.3 Assist with the development of any investigation paperwork necessary to complete the investigation.

### **3.0 APPLICABILITY**

- 3.1 Incident Reporting and Analysis Process applies to all PPL employees who are directly or indirectly involved in a work related safety event.
- 3.2 This process does not apply to the general public. Events that occur to the general public or on PPL property must be reported in accordance with the Office of General Counsel’s Claims Instructions No. 3 (click on link): [OGC - Reporting Accidents Involving Injury to Non-employees](#)



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### 4.0 TERMS AND DEFINITIONS

- 4.1 **Apparent Cause Evaluation (ACE)** – An investigation conducted to determine the apparent cause and extent of condition of an event or problem. An ACE provides a limited investigation and assignment of corrective actions. Contact your CAPCO (Corrective Action Program Coordinator) or a member of the TD&I Experience Assessment Group for more information.
- 4.2 **CAPCO – Corrective Action Program Coordinator** - Assists their respective business lines with the event analysis processes and guides investigation leads with closing out CCATS.
- 4.3 **CCATS - Corporate Corrective Action Tracking System** – Is an online database in which all safety event data are entered and maintained. Click on the Link: [CCATS Training and Guidance](#).
- 4.4 **DART Rate (Days Away, Restricted, Transferred)** – A rate that is calculated using only those OSHA recordable events that were considered restricted or lost time incident. This is a subset of the Incident Rate (IR)

**NOTE:** Calculation –  $\frac{200,000 \times \# \text{ of DART incidents}}{\text{Total Hours Worked}} = \text{DART Rate}$

- 4.5 **Department Level Evaluation (DLE)** – An incident having a “Minor” risk will require a Department Level Evaluation. Contact your CAPCO (Corrective Action Program Coordinator) or a member of the TD&I Experience Assessment Group for more information.
- 4.6 **Direct Supervision of Augment Employees** – A PPL Electric Utilities management employee providing day-to-day direction to augment or temporary employees.
- 4.7 **Event** - An occurrence in an unintended sequence of events which results in, or has potential to result in death, injury, property damage, productivity loss and/or monetary loss. Events comprise all Incidents and Potential Incidents.(Shouldn't illness be listed?)
- 4.7.1 **Incident** – An event in which there is Loss (i.e. an employee tripped and fell contacting the ground causing a scrape on their hand. No medical treatment necessary. The employee receiving the scrape is considered the loss; the employee was not in the same condition as they were when they came to work.) An incident is also, a near miss event in which no one was injured. For example: an employee tripped but didn't fall and had no adverse effects of the trip.)
- 4.7.2 **Potential Incident** – An unplanned Near Miss (e.g., close call, near hit, or narrow escape event) that did not result in injury, illness, or damage – but had the potential to do so.



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- 4.8 **Event Analysis** – A review of the event, to determine the cause(s) and to specify corrective actions. The depth of the event analysis should be determined by the severity or potential severity of the event.
- 4.9 **General Public Injuries** - Refer to the Office of General Counsel's Website.
- 4.10 **Illness** – Any incident in which an employee is afflicted with an acute or chronic illness, such as, but not limited to, skin disease, respiratory disorder, or poisoning.
- 4.11 **IR (Incident Rate)** – A rate that is calculated using all OSHA recordable incidents including DART incidents and any other incident that met the OSHA definition of medical treatment.

**NOTE:** Calculation –  $\frac{200,000 \times \text{Total \# of OSHA recordable incidents}}{\text{Total Hours Worked}} = IR$

- 4.12 **Non-Work related injury** - If an employee comes to work and reports they want to go to a doctor or hospital for a non-work related event, the employee should contact an ambulance, family member or non-PPL friend to take them. PPL should not transport employees with a non-work related injury or illness for medical treatment. However, supervisor must use good judgment and be prepared to support the transport if conditions restrict family or ambulance access to the work area (i.e., right of way, rural areas, rough terrain, etc.).
- 4.13 **OSHA log** – Any PPL Electric Utility employee who experienced a work related injury/illness meeting the definition of recordability as well as any augment employee who falls within the definition of 3.16 in the definition section shall be place on this log.
- 4.14 **OSHA Recordable (Non-DART)** – An incident that meets OSHA's definition of medical treatment but does not result in an employee's work being restricted or losing time.
- 4.15 **OSHA Recordable (Restricted Duty; DART)** – An incident that results in an employee's normal work activities being restricted. This may result in the employee being temporarily transferred to a job that fits within the restrictions he was provided.
- 4.16 **OSHA Recordable (Lost Time; DART)** – An incident that results in an employee missing work hours (Does not include lost work hours during the day of the event).
- 4.17 **Root Cause Analysis (RCA)** – An analysis/investigation conducted to determine root causes of an event. Root Cause Analysis uses the TapRoot Methodology to logically determine the root causes of an event. The RCA determines what happened (event timeline/flowchart), how the event happened (causal factors) and why it happened (causes). RCAs also identify the extent of condition and corrective actions. Contact your CAPCO (Corrective Action Program



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Coordinator) or a member of the TD&I Experience Assessment Group for more information.

**4.18 Safety Related Events:**

**4.18.1 Property Damage Events** – Damage to Company property or personal property caused by an act of either an employee or a non-employee.

**4.18.2 Motor Vehicle Events** – any incident that involves a company fleet vehicle that results in injury to an occupant or the public or damage to the company fleet vehicle or public property. (Would a MV event also be when PPL employees are using their personal vehicles on company time?)

- a. Incidents involving the use of incidental equipment such as cranes, aerial equipment, and related equipment mounted on a motor vehicle (mobile work platform), industrial forklifts, backhoes, excavators, bicycles, all-terrain and similar type vehicles are not motor vehicle accidents.

**4.18.3 Injury/Illness Events –**

- a. **Events requiring No Treatment or first aid only** - An incident that results in an employee receiving no medical treatment or first aid treatment that does not meet the OSHA recordability definition of medical treatment.
- b. **Events requiring non-Emergency Medical Treatment** - An incident that results in an employee receiving medical treatment that meets the OSHA definition of medical treatment. This is an event which an employee is not transported to via ambulance to a medical facility. This type of incident may or may not be considered a DART (Days Away Restricted Transferred) incident depending on the severity.
- a. **Events requiring Emergency Medical Treatment** - An incident that requires an employee to be transported via ambulance to a medical facility. This type of incident may or may not be considered a DART incident depending on the severity.

**4.19 Serious Injury Fatality (SIF)** – As defined by Edison Electric Institute, SIF was developed to be a metric that better facilitates the prevention of fatalities and serious injuries that are life threatening or life changing for the employee. The metric should reflect the extent of serious injury to employee(s) from events within the control of the employee and/or the employer. Criteria SIF's are work related and serious injuries that occur within the control of the employee and/or employer as defined below.



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### **5.0 MAIN BODY**

#### **5.1 Work Related Injury/illness Event Not Requiring Medical Treatment**

(Employees only – augmented contractors are not subject to PPL Panel Provider list nor are they covered by PPL Workers Compensation)

- 5.1.1 Employee reports event to supervisor by the end of the work shift.
- 5.1.2 Supervisor asks employee if they wish to be seen by Occupational Athletic Trainer or PPL Panel Provider. Supervisor may use [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) as guide for asking employee questions before entering the information into CCATS.
- 5.1.3 Employee declines to see a PPL Panel Provider, signs workers compensation [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) and returns the form to supervisor who then forwards to Occupational Health Nurse.
- 5.1.4 Supervisor notifies Safety Professional, Occupational Health Nurse, and appropriate line management.  
  
**IMPORTANT\*\* If at any point after the initial report of incident, the employee requests to be seen by a PPL Panel Provider, it is the supervisor's responsibility to notify Safety Professional and Occupational Health Nurse of the request to see a PPL Panel Provider.**
- 5.1.5 Supervisor inputs event details into CCATS within 24 hours after the event is reported.
- 5.1.6 Safety Professional populates/updates injury/illness consequence within CCATS incident, including indicating whether the event was a OSHA recordable or not.
- 5.1.7 Supervisor leads event analysis with assistance from event employee, associated crew/witnesses, CAPCO and additional resources as needed (i.e. Safety Professional, second-level management (e.g., field managers), other Subject Matter Experts, etc.).
- 5.1.8 Supervisor, or designated individual, inputs analysis information into CCATS "investigation" module within the created CCATS Incident. Any corrective actions or recommendations (Action Items) created shall be input as an "Action Item" within the investigation module in CCATS.
- 5.1.9 Supervisor, or investigation lead, reviews and submits investigation for approval.





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- 5.1.10 Designated approver reviews and closes the investigation module within the CCATS incident.
- 5.1.11 Safety Professional updates the injury/illness consequence, as needed. Prior to closing the injury/illness consequence they will confirm current status, as stated in the injury/illness module, with the event employee's supervisor.
- 5.1.12 Supervisor reviews all content and closes CCATS incident and investigation.
- 5.2 **Work Related Injury/Illness Event Requiring Non-Emergency Medical Treatment** (Employees only – augmented contractors are not subject to PPL Panel Provider list nor are they covered by PPL Workers Compensation)
  - 5.2.1 Employee reports event to supervisor at the end of the work shift.
  - 5.2.2 Supervisor contacts occupational health nurse to review next steps and receive Workers Compensation electronic packet.
  - 5.2.3 Supervisor gives to employee a list of a PPL Panel Providers and the Workers Compensation Employee Notification [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#). Employee accepts and requests to see a PPL Panel Provider, signs Form 5278 and takes along with them the Medical Release (Return to Work – Post Work Injury/Illness Claimr) [Form 5433 - MEDICAL RELEASE](#) and a copy of employee's job description. (All completed documents are returned to the supervisor.)
  - 5.2.4 Supervisor notifies local safety professional, occupational health nurse, and appropriate line management.

**IMPORTANT\*\* If at any point after the initial report of incident, the employee requests to be seen by a panel provider, it is the supervisor's responsibility to notify (EU) Health & Safety Representative and EU Occupational Health Nurse of the request to see a PPL Panel Provider.**
  - 5.2.5 Supervisor, or designated management employee, goes to medical facility to meet employee ensuring to take with them the form titled: Workers Compensation Employee Notification [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) and the Medical Release (Return to Work – Post Work Injury/Illness Claim) [Form 5433 - MEDICAL RELEASE](#).
  - 5.2.6 Employee shall give the completed Return to Work form to their supervisor.



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- 5.2.7 Supervisor shall send a copy of the completed Workers Compensation Employee Notification [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) and the Medical Release (Return to Work – Post Work Injury/Illness Claim) [Form 5433 - MEDICAL RELEASE](#) or equivalent to the Occupational Health Nurse. Deleted EU H&S Rep bc medical information needs to be reviewed by Denise to ensure no HIPAA related information is disclosed.
- 5.2.8 Supervisor shall ensure the event employee provides the supervisor with an updated Return to Work form for any additional follow up medical visits.
- 5.2.9 Supervisor shall provide a copy of any additional completed Return to Work forms from any additional medical follow up visits to Occupational Health Nurse.
- 5.2.10 The Occupational Health Nurse provides updates to the Safety Professional.
- 5.2.11 Supervisor, or designated employee, inputs event details into CCATS within 24 hours after the event is reported.
- 5.2.12 Safety Professional populates/updates injury/illness consequence within CCATS incident including indicating whether the event was a recordable or not ensuring they have a copy of the completed Return to Work Form. EU Safety Professional is responsible to update OSHA recordability status within 7 days of the employee receiving medical treatment.
- 5.2.13 Supervisor conducts event analysis with assistance from event employee, associated crew/witnesses, CAPCO and additional resources as needed (i.e. Safety Professional, second-level management, other Subject Matter Experts, etc.). Depending on the severity of this event will determine the level of analysis necessary (i.e. DLE, ACE, and RCA).
- 5.2.14 Supervisor, or designated individual, inputs analysis information into CCATS “investigation” module within the created CCATS Incident. Any corrective actions or recommendations (Action Items) created shall be input as an “Action Item” within the investigation module in CCATS.
- 5.2.15 Supervisor, or investigation lead, reviews and submits investigation for approval.
- 5.2.16 Designated approver reviews and closes the investigation module within the CCATS incident.





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5.2.17 Safety Professional updates the injury/illness consequence, as needed. Prior to closing the injury/illness consequence Safety Professional confirms current status, as stated in the injury/illness module, with the event employee's supervisor.

5.2.18 Supervisor reviews all content and closes the CCATS incident.

**5.3 Work Related Injury/Illness event requiring Emergency Medical Treatment**  
(Employees only – augmented contractors are not subject to PPL Panel Provider list nor are they covered by PPL Workers Compensation)

5.3.1 Employee or co-worker/witness calls 911 to respond to event (if emergency occurs in an area where cell-phone service is not available, employees shall use a PPL company radio to contact the DCC/TCC).

5.3.2 Employee or co-worker/witness reports event to supervisor and inform them what medical facility they will be taken to.

5.3.3 Supervisor notifies a safety professional, occupational health nurse, and appropriate line management.

5.3.4 Supervisor, or designated management employee, goes to medical facility to meet employee ensuring to take with them the form titled: Workers Compensation Employee Notification [Form 5287 - Incident Reporting Job Aid - Questions to Ask Employees Before Entering in CCATS](#) and [Form 5433 - MEDICAL RELEASE](#)

*Remember, the important part is the employee receives the appropriate medical attention, so if they are unable to sign the workers compensation form initially, that is OK.*

5.3.5 Supervisor shall ensure prior to the employees' release from the hospital the treating physician has completed the Return to Work form (5433) and provided to the employee and supervisor. At that point, have the event employee sign the workers compensation form 5278.

5.3.6 Supervisor shall send a copy of the completed Medical Release to Return to Work Form to the EU Occupational Health Nurse. Refer to Attachment A - Work Flow for Reporting Injury-Illness Cases.

5.3.7 Supervisor shall ensure the event employee provides the supervisor with an updated Return to Work form for any additional follow up medical visits.

5.3.8 Supervisor shall provide a copy of any additional completed Return to Work forms from any additional medical follow up visits to occupational health nurse.



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- 5.3.9 The Occupational Health Nurse provides updates to the Safety Professional responsible for the coverage area of the event employee.
- 5.3.10 Supervisor, or designated employee, inputs event details into CCATS within 24hrs of event reported.
- 5.3.11 Safety professional populates/updates injury/illness consequence within CCATS incident including indicating whether the event was a recordable or not ensuring they have a copy of the completed Return to Work Form. EU Safety Professional is responsible to update recordability status within 7 days of the employee receiving medical treatment.
- 5.3.12 Supervisor conducts event analysis EU Safety Professional and additional resources as needed (i.e., second-level management, or Subject Matter Experts, etc.) Depending on the severity of this event will determine the level of analysis necessary (i.e. DLE, ACE, RCA).
- 5.3.13 Supervisor, or designated individual, inputs analysis information into CCATS "investigation" module within the created CCATS Incident. Any corrective actions or recommendations (Action Items) created shall be input as an "Action Item" within the investigation module in CCATS.
- 5.3.14 Supervisor, or investigation lead, reviews and submits investigation for approval.
- 5.3.15 Designated approver reviews and closes the investigation module within the CCATS incident.
- 5.3.16 Safety professional updates the injury/illness consequence, as needed. Prior to closing the injury/illness consequence EU Safety Professional confirms current status, as stated in the injury/illness module, with the event employee's supervisor.
- 5.3.17 Supervisor reviews all content and closes CCATS incident

**5.4 Work Related Motor Vehicle Event (Employees only)**

- 5.4.1 Employee reports event to supervisor.
- 5.4.2 Supervisor asks if there are any injuries.
- 5.4.3 If any employee is injured refer to Section 5 (Main Body) of this procedure on how to handle the employee injury. If no injury, continue with 5.4.4 below.
- 5.4.4 Supervisor shall determine if the event involved a Commercial Motor Vehicle and if the employee holds CDL. Refer to Human Resources General Procedure (GP) 101. Click on link: [Alcohol and Drugs \(GP 101\)](#)



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- 5.4.5 Supervisor notifies Safety Professional and appropriate line management.
- 5.4.6 Supervisor inputs event details into CCATS within 24 hours of a motor vehicle event. Reference to Safety Procedure #42: [Motor Vehicle Incident Classification](#) is helpful for determining the type of motor vehicle event. Contact your local EU Safety Professional for assistance.
- 5.4.7 Safety Professional populates/updates the transportation consequence within CCATS incident including indicating whether the event was a DOT reportable event or not.
- 5.4.8 Supervisor shall conduct and event analysis.
- 5.4.9 Supervisor leads event analysis with assistance from event employee, associated crew/witnesses, and additional resources as needed (i.e. CAPCO, Safety Professional, second level management, other Subject Matter Experts, etc.).
- 5.4.10 Supervisor, or designated individual, inputs analysis information into CCATS "investigation" module within the created CCATS Incident. Any corrective actions or recommendations (Action Items) created shall be input as an "Action Item" within the investigation module in CCATS.
- 5.4.11 Supervisor, or investigation lead, reviews and submits investigation for approval.
- 5.4.12 Designated approver reviews and closes the investigation module within the CCATS incident.
- 5.4.13 Safety Professional updates the transportation consequence, as needed.
- 5.4.14 Supervisor reviews all content and closes CCATS incident.

### **5.5 Work Related Property Damage Event**

- 5.5.1 Employee reports event to supervisor.
- 5.5.2 Supervisor asks if there are any injuries.
- 5.5.3 If any employee is injured refer to Section 5 (Main Body) of this procedure on how to handle an employee injury. If no injury, continue with 5.5.4 below.
- 5.5.4 Supervisor notifies Safety Professional and appropriate line management.
- 5.5.5 Supervisor inputs event details into CCATS within 24 hours of a motor vehicle event. Reference to Safety Procedure #42: [SP 42 Motor Vehicle Incident Classification](#) is helpful for determining the type of motor vehicle event. Contact your local EU Safety Professional for assistance.



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- 5.5.6 Supervisor shall conduct an event analysis.
- 5.5.7 Supervisor leads event analysis with assistance from event employee, associated crew/witnesses, and additional resources as needed (i.e. CAPCO, safety professional, second-level management, or a Subject Matter Expert, etc.).
- 5.5.8 Supervisor, or designated individual, inputs analysis information into CCATS "investigation" module within the created CCATS Incident. Any corrective actions or recommendations (Action Items) created shall be input as an "Action Item" within the investigation module in CCATS.
- 5.5.9 Supervisor, or investigation lead, reviews and submits investigation for approval.
- 5.5.10 Designated approver reviews and closes the investigation module within the CCATS incident.
- 5.5.11 Safety professional updates the property damage consequence, as needed.
- 5.5.12 Supervisor reviews all content and closes CCATS incident.

**5.6 Reporting Tick & Lyme Disease**

- 5.6.1 Tick bites are OSHA recordable if all of the following occurs:
  - a. The tick was found embedded and;
  - b. Exposure to the tick is likely to have occurred during a work activity and;
  - c. Employee received medical treatment meeting the recordability level.

**Note:** It is no longer necessary to send the tick out for testing. Refer to CDC.gov, "Life Cycle of Hard Ticks that Spread Disease" and US Department of Labor, OSHA Fact Sheet, "Lyme Disease" Ticks and [SP 55 - Tick Bite and Lyme Disease Prevention](#).



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### **5.7 Cases Involving Musculoskeletal Disorders (MSD)**

- 5.7.1 Cases involving Musculoskeletal Disorders (e.g., Carpal Tunnel, Tendonitis, bursitis, etc.) are difficult to determine if they are related to work (OSHA Recordable). These types of cases will be looked at on a case by case basis. The following items will be used to assist in determining work relatedness and OSHA recordability:
- a. Thorough event analysis.
  - b. Treatment provided by the treating physician.
  - c. Strict adherence to OSHA's recordkeeping regulation, 29 CFR 1904.5 Determination of Work-Relatedness. Click on Link: [OSHA Determination of Work-Related Events](#)
  - d. If necessary, a third party medical consultant opinion of work relatedness.

### **5.8 Serious Injury Fatality (SIF)**

- 5.8.1 Refer to Edison Electric Institute (EEI) January 2016 Occupational Safety & Health Committee - Serious Injury & Fatality Criteria (SIF) information at the end of this procedure.
- 5.8.2 Risk ratings for SIF events must be entered on the Incident Panel in CCATS. CCATS records for Loss Incident / Safety events cannot be closed without the SIF information completed.
- 5.8.3 It is the responsibility of the "Safety Specialist" shown on the Incident ID / Edit Responsibilities tab to complete the Safety Specialist Edit Page.
- a. Under Add Menu, click on Safety Specialist Edit Page.
  - b. Complete the following required (\*) fields:
    - Injury Category:
    - SIF Severity Criteria:
    - SIF Potential Rating:
  - c. Save

## **6.0 REFERENCES**

- 6.1 Occupational Safety & Health Administration 29 CFR 1904 [OSHA Recording and Reporting Occupational Injuries and Illness](#)
- 6.2 PPL CCATS Reference Guides - [CCATS Reference Guidelines](#)

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 Occupational Safety & Health Administration 29 CFR 1904



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## **8.0 TRAINING / SAFETY – N/A**

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

## **10.0 ATTACHMENTS – N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## **12.0 RECORD HISTORY**

<b>Prepared by:</b>	Deborah A. Sweinhart, Health & Safety
<b>Reviewed by:</b>	Denise Nika (Occupational Health Nurse); Janelle Keeney (Manager – HR); Safety Professionals: Dalton Shorts, Steve Mondschein, Elizabeth McKay, Jared Dyer, and Brian Kostik
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations

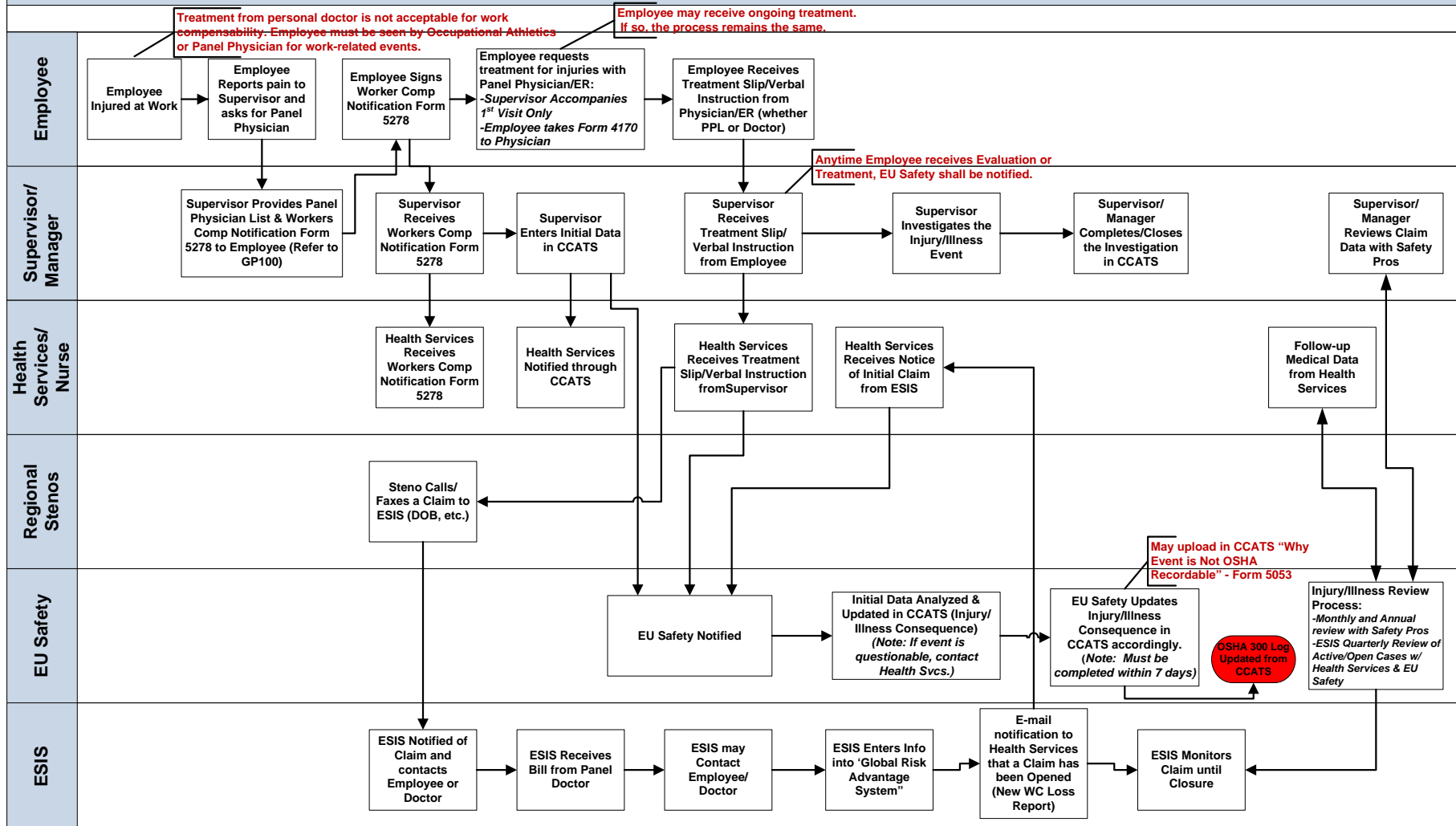
Revision	Date	Revision Comments
04	04/27/2017	Section 2.4.5 - Revised statement indicating when a Form 5053 is needed. In Section 2.1.1, removed the word “immediately” pertaining to employees responsibility for reporting accidents. This change is made according to OSHA’s non-retaliation regulation, and OGC’s recommendation. All broken links to forms throughout the document were fixed.
03	04/01/2016	Revised to include SIF information documented in CCATS. Health Services revised Forms: 5278 (Workers Compensation Employee Notification); 5287 (Incident Reporting Job Aid); 5433 (Medical Release Return to Work _ Post Work Injury/Illness Claim). Edison Electric Institute revised SIF criteria (1/2016).
02	01/01/15	Revised to include OSHA Reporting Requirements for Emergency Incidents. Revised to include clarifying statements referencing augmented contractors not covered by PPL Workers Compensation or PPL list of Panel Providers.
01	03/21/14	Changes made to clarify understanding of the process
00	07/20/12	Converted from General Safety Procedure to Electric Utilities Safety Procedure



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### Workflow for Reporting Injury-Illness Cases







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**Edison Electric Institute**  
**Occupational Safety & Health Committee**  
**Serious Injury & Fatality Criteria (SIF)**  
**Revision Date: January, 2017**

**What is a SIF?** SIF was developed to be a metric that better facilitates the prevention of fatalities and serious injuries that are life threatening or life changing for the employee. The metric should reflect the extent of serious injury to employee(s) from events within the control of the employee and/or the employer.

**Criteria** SIF's are work related and serious injuries that occur within the control of the employee and/or employer as defined below.

**Defining Work Related**

As the General Rule, work related injuries may result from:

- Activities included within the scope of employment **or**
- Activities related to a condition of employment.

*If we pass the General Rule criteria, ask:*

- Is this injury OSHA Recordable?
- Was the injured worker being paid for work or performing work on behalf of the employer at the time of the event or exposure?
- Was the injured worker's presence at the place of the injury exposure related to a condition of employment?
- Was the cause of the incident within the control of the employee and/or the employer?

*If the answer to all of these questions is "Yes," consider the injury to be work-related.*





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### **Frequently Asked Questions**

- i. If an employee is injured while walking, should these be considered work-related? The case should be evaluated to consider whether circumstances within the control of the employee or the employer caused or contributed to the injury. It is the intent to count cases where the employee trips, slips, stumbles, falls, or is injured by a hazard in the workplace. It is not the intent to count cases that are outside of the control of the employer, such as a heel break.
- ii. Are dog bites in the control of the employer or employee? Dog bite cases should be evaluated to consider whether the employee was a victim of an unanticipated attack or whether the employee failed to take appropriate actions to prevent the injury. If the employee was clearly a victim, it should not be considered work-related

### **Examples of Work Related Events**

- Injuries that occur while the employee is performing a work task (e.g., production employee engaged in construction work and operations)
- Injuries that occur while the employee is engaged in normal activities that happen at work between specific work tasks (talking to supervisor, selecting tools, etc.)
- Injuries that occur while injured worker is engaged in work-related travel as defined by current OSHA Recordkeeping Standards
- Injuries resulting from employee slips or trips from a hazard within the work place including employer parking lots and decks
- Injuries that occur during charitable events endorsed by the employer

### **Examples of Non-Work Related Events**

- Injuries that occur on company property or while the worker is engaged in a work activity but *would have occurred at the same time and at the same level of severity even if the employee was not engaged in a work activity* (epileptic seizure, diabetic seizure, heart attacks, sudden joint failure, etc.)
- Injuries that are related to commuting to or from a place of employment outside of work hours
- Injuries that result *solely* from normal body movements unrelated to work (sneezing, coughing, bending over to tie a shoe, walking, etc.)
  - Injuries that result *solely* from personal tasks performed outside of assigned work hours (retrieving ice for personal use, holding community meeting at employer premises, etc.)
- Injuries that occur in a travel hotel unrelated to work
- Injuries that occur where the employee is present at the site as a member of the general public, unrelated to his or her employment status



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- Injuries that result from voluntary participation in wellness, medical, or fitness programs, or recreational activity (team building events)
- Injuries where symptoms surface at work from a known non-work-related event or exposure (yard work, sporting events, etc.)
- Injuries that result from eating/drinking or preparing food/drink for personal consumption (food/drink not provided by employer)
- Injuries that result from personal grooming, self-medication for a non-work-related condition, or intentionally self-inflicted injuries
- Injuries that result from non-preventable vehicle accidents

### **Identifying and Classifying Serious Injuries**

When the work-related criteria have been met, compare the employee injury to the Serious Injury criteria listed below to determine if the injury is deemed “Serious.” (Each case should be counted only once. In cases with multiple injuries, assign the case to the category representing the most severe injury.)

1. Fatalities
2. Amputations (involving bone)
3. Concussions and/or cerebral hemorrhages
4. Injury or trauma to internal organs

#### **Frequently Asked Question**

- i. When should a case of organ damage be classified as serious, such as an exposure to chemical substance? Injuries should be classified as serious if objective medical evidence indicates significant or sustained (beyond initial event, acute treatment and testing) organ damage, or progressive changes in organ function or anatomy. This criterion does not include rapidly dissipating signs and symptoms from the acute event (such as irritation or localized redness) and their associated treatment, or injury from long term or repetitive exposures. Only cases that involve relatively short term events should be included in the serious metric, even if the result is an illness (example, reactive upper-dysfunction syndrome resulting from chlorine exposure event). Illnesses that develop from exposure over long periods of time (years) are not to be captured in this metric (example, fibrosis of the lung from asbestos exposure).
  - ii. Is a hernia considered a severe case? A hernia by itself would not be classified as a severe case. However, if the hernia causes damage to an internal organ such as a strangulated colon, it would be classified as a severe case.
5. Bone fractures with the following considerations: a. Include fractures of the fingers and toes only if they are open, compound, or comminuted (crushing); b. Include all bone fractures of the face, skull, or navicular wrist bone; c. Exclude any hairline fractures unless described above



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**Frequently Asked Questions**

- i. Are all hairline fractures excluded? Hairline fractures in the face, skull, or navicular wrist bone are considered a serious injury. All other hairline fractures are excluded.
  - ii. Are nasal fractures included as a serious injury in bone fracture criteria? Typical nasal cartilage-only fractures are not likely to cause life altering or life threatening injuries, unless other facial bone fractures are involved. If the employee has a “broken nose” that involves facial bone fractures, the injury should be included as a serious injury. Nasal cartridge-only fractures should not be included as a serious injury.
  - iii. Are broken teeth considered a severe case? No, unless there were other injuries in addition that meet the criteria (Example: Broken Jaw)
6. Complete tendon, ligament and cartilage tears of the major joints (e.g., shoulder, elbow, wrist, hip, knee, and ankle).

**Frequently Asked Questions**

- i. Are partial tendon, ligament and cartilage tears included? No. Partial tears are not to be classified as a serious injury.
7. Herniated disks (neck or back)
8. Lacerations resulting in severed tendons and/or a deep wound requiring internal stitches

**Frequently Asked Question**

- i. Does a puncture that requires internal sutures meet the laceration criteria? Yes
9. 2<sup>nd</sup> (10% body surface) or 3<sup>rd</sup> degree burns
10. Eye injuries resulting in eye damage or loss of vision

**Frequently Asked Questions**

- i. Does a corneal abrasion constitute eye damage injury? No. Corneal abrasions and/or scratches due to foreign bodies are considered minor and usually heal quickly.
- ii. What are some examples of “eye damage” that meet the criteria? Examples of eye damage would be cases where the eyeball is penetrated or damaged by a significant foreign body.
- ii. Does loss of vision mean total loss or is some degradation of vision all that is required to meet the serious injury criteria? Loss of vision means any permanent change in the employee’s vision or change that requires corrective lenses.



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11. Injections of foreign materials (e.g. hydraulic fluid)

12. Severe heat exhaustion and all heat stroke cases (Severe heat exhaustion cases are those where all of the following symptoms are present: profuse sweating, nausea, and confusion). If confirmed fainting occurs due to the heat exposure, this is an automatic severe case. a. Exclude cases where confirmed personal

**Frequently Asked Question**

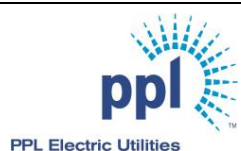
- i. If an employee receives an IV for heat exhaustion, does this make it a severe case? The application of an IV does not necessarily indicate a severe case; further investigation should be conducted to determine if the criteria for severe heat exhaustion were met (profuse sweating, nausea, and confusion or confirmed fainting).

13. Dislocation of a major joint (hip, shoulder, elbow, etc.)

**Other Terms and Definitions**

1. Serious Injury Incidence Rate (SIIR)

The Serious Injury Incidence Rate (SIIR) is calculated using the formula (# cases x 200,000/hours worked). The calculation of the SIIR uses the same hours worked number as your calculation of the Recordable Incidence Rate.



**SP 32  
SAFETY PROCEDURE  
NEW/TRANSFERRED EMPLOYEE SAFETY  
ORIENTATION**

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Revision: 01  
Effective Date: 07/13/2017  
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**This Safety Procedure Has been removed from service as of 4/08/2019.**

**1.0 PURPOSE/SCOPE – N/A**

**2.0 RESPONSIBILITY – N/A**

**3.0 APPLICABILITY – N/A**

**4.0 TERMS AND DEFINITIONS – N/A**

**5.0 MAIN BODY – N/A**

**6.0 REFERENCES - N/A**

**7.0 REGULATORY REQUIREMENTS – N/A**

**8.0 TRAINING / SAFETY – N/A**

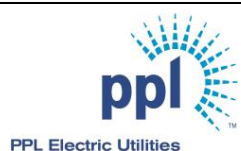
**9.0 COMPLIANCE AND EXCEPTIONS - N/A**

**10.0 ATTACHMENTS – N/A**

**11.0 RECORD RETENTION – N/**

**12.0 RECORD OF REVISIONS**

Rev	02	Date	04/08/2019	Effective	04/08/2019
<b>Prepared by:</b>		Elizabeth McKay, Health & Safety Specialist			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Elizabeth McKay & Jared Dyer			
<b>Approved by:</b>					
<b>Revision Comments:</b>		Safety Procedure has been removed from service as of 2/21/2019. New Employee/Transferred employee information will be covered in E-Learnings going forward.			



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**NEW/TRANSFERRED EMPLOYEE SAFETY**  
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<b>Rev</b>	01	<b>Date</b>	07/13/2017	<b>Effective</b>	07/13/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure links are created to Form 4196.			

<b>Rev</b>	00	<b>Date</b>	07/31/2012	<b>Effective</b>	07/30/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

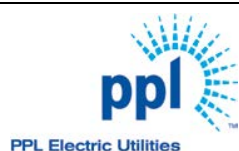


**SP 33**  
**SAFETY PROCEDURE**  
**POWERED INDUSTRIAL TRUCKS**

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<b>11.0</b>	<b>RECORDS RETENTION</b>	<b>15</b>
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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish minimum safety and training requirements pertaining to the use of Fork trucks, Lift Trucks, Motorized Hand Trucks, and other Specialized Industrial Trucks, powered by electric motors or internal combustion engines.

## **2.0 RESPONSIBILITY**

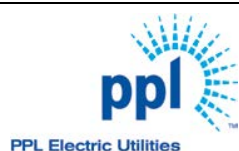
### **2.1 Safety Operations**

- 2.1.1 Assure availability of approved training in the proper operation of powered industrial trucks.
- 2.1.2 Audit/monitor the use of powered industrial trucks in compliance with this Procedure.
- 2.1.3 Provide guidance and consultation for powered industrial trucks.

### **2.2 Management**

- 2.2.1 Responsible for the implementation and enforcement of this procedure.
- 2.2.2 Require employees to work within the provisions of this procedure.
- 2.2.3 All employees required to operate equipment receive proper training.
- 2.2.4 All operators of this equipment shall receive an operating review/evaluation at least once every three years.
- 2.2.5 All operators of this equipment receive the necessary refresher training along with follow-up documentation when any one of the following occurs:
- a. Employee is involved in an accident or a near miss incident, involving a powered industrial truck.
  - b. Employee is observed operating powered industrial truck in an unsafe manner.
  - c. Operator receives an evaluation that reveals the operator is not operating the truck in a safe manner.
  - d. The operator is assigned to operate a different type of truck.
  - e. A condition in the workplace changes in a manner that could effect safe operation of the truck.





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2.3 Evaluator

- 2.3.1 Shall have the knowledge, training and experience to evaluate the competence of a powered industrial truck operator
- 2.3.2 Shall utilize the manufacturer specifications and the PPL forklift training program content to evaluate the operator.

2.4 Operators

- 2.4.1 Recognize the hazards that may be faced during the operation of powered industrial trucks and adjust operations according to those conditions.
- 2.4.2 Operate powered industrial trucks in accordance with OSHA regulations, Safety Rules and procedures.
- 2.4.3 Conduct and document daily safety inspection on powered industrial trucks using appropriate operator daily checklist, Form 5147 or Form 5148.
- 2.4.4 Recognize the characteristics of the load to be handled.

**3.0 APPLICABILITY**

- 3.1 This procedure establishes minimum safety and training requirements pertaining to the use of Fork trucks, Lift Trucks, Motorized Hand Trucks, and other Specialized Industrial Trucks, powered by electric motors or internal combustion engines.

**4.0 TERMS AND DEFINITIONS**

- 4.1 **Stability** - center of gravity is the point on an object at which all of the object's weight is concentrated. For symmetrical loads, the center of gravity is at the middle of the load. Counterweight is the weight that is built into the truck's basic structure and is used to offset the load's weight and to maximize the vehicle's resistance to tipping over.
- 4.2 **Fulcrum** - truck's axis of rotation when it tips over.
- 4.3 **Grade** - slope of a surface, which is usually measured as the number of feet of rise or fall over a hundred foot horizontal distance (the slope is expressed as a percent).
- 4.4 **Lateral stability** - truck's resistance to overturning sideways.



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- 4.5 **Load center** - the horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.
- 4.6 **Longitudinal stability** - truck's resistance to overturning forward or rearward.
- 4.7 **Powered Industrial Truck** - a mobile, power-driven vehicle used to carry, push, pull, lift, stack, or tier material.
- 4.8 **Track** - distance between the wheels on the same axle of the truck.
- 4.9 **Wheelbase** - distance between the centerline of the vehicle's front and rear wheels.
- 4.10 **Designations of powered industrial trucks are as follows:**
  - D - Diesel Engine
  - S - Diesel Engine with Safeguards
  - DY - Diesel Engine with Safeguards, No Electronics and Temperature Limits
  - E - Electric
  - ES - Electric with Safeguards
  - EE - Electric with Safeguards and Complete Electric Component Enclosure
  - EX - Electric Designed for Atmospheres Containing Flammable Gases and Dusts
  - G - Gasoline
  - GS - Gasoline with Safeguards
  - LP - Liquefied Petroleum Gas
  - LPS - Liquefied Petroleum Gas with Safeguards

## **5.0 MAIN BODY**

- 5.1 **Safety Requirements**
  - 5.1.1 Modifications and additions that affect capacity and safe operation shall not be performed without manufacturer's prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.
  - 5.1.2 If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck



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and attachment combination at maximum elevation with load laterally centered.

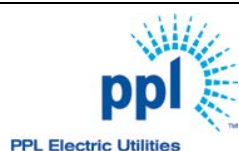
- 5.1.3 The user shall see that all nameplates and markings are in place and are maintained in a legible condition.
- 5.1.4 An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.
- 5.1.5 Avoidance of duplicate training. If an operator has previously received training in the subject matter of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely by a qualified trainer.

**5.2 CERTIFICATION**

- 5.2.1 The employer shall certify that each operator has been trained and evaluated as required. The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

**5.3 TRUCK OPERATIONS**

- 5.3.1 The truck operator shall assure clearance overhead, to the both sides, to the front and rear prior to placing the PIT in motion.
- 5.3.2 Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
- 5.3.3 No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
- 5.3.4 Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.
- 5.3.5 The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.
- 5.3.6 When a powered industrial truck is left unattended, load-engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.



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- 5.3.7 A powered industrial truck is unattended when the operator is 25 ft. or more away from the vehicle which remains in his view or whenever the operator leaves the vehicle and it is not in his view.
- 5.3.8 When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.
- 5.3.9 A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, platform or freight car. Trucks shall not be used for opening or closing freight doors.
- 5.3.10 Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.
- 5.3.11 there shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.
- 5.3.12 an overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.
- 5.3.13 A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.
- 5.3.14 only approved industrial trucks shall be used in hazardous locations. Refer to Attachment A for specific requirements on allowable uses for the list of designations for powered industrial trucks.
- 5.3.15 such protection from falling objects as indicated necessary by the operating conditions should be provided.
- 5.3.16 Fire aisles, access to stairways, and fire equipment shall be kept clear.



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**5.5 TRAVELING**

- 5.5.1 All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.
- 5.5.2 The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.
- 5.5.3 Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.
- 5.5.4 The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
- 5.5.5 Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 ft. from the center of railroad tracks is prohibited.
- 5.5.6 The driver shall be required to look in the direction of, and keep a clear view of the path of travel.
- 5.5.7 Grades shall be ascended or descended slowly.
- 5.5.8 When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.
- 5.5.9 On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.
- 5.5.10 Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
- 5.5.11 The driver shall be required to slow down for wet and slippery floors.
- 5.5.12 Dockboard or bridgeplates shall be properly secured before they are driven over. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded.
- 5.5.13 Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.
- 5.5.14 Motorized hand trucks must enter elevator or other confined areas with load end forward.



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5.5.15 running over loose objects on the roadway surface shall be avoided.

5.5.16 While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

**5.6 LOADING**

5.6.1 Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads that cannot be centered.

5.6.2 Only loads within the rated capacity of the truck shall be handled.

5.6.3 The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.

5.6.4 Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

5.6.5 A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.

5.6.6 Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

**5.7 OPERATION OF THE TRUCK**

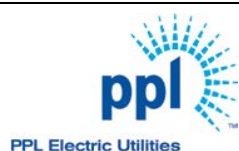
5.7.1 If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.

5.7.2 Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.

5.7.3 Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.

5.7.4 No truck shall be operated with a leak in the fuel system until the leak has been corrected.

5.7.5 Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.



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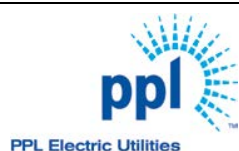
**5.8 OPERATION/PRE-OPERATION INSPECTIONS**

- 5.8.1 Daily Operator inspection on all power industrial trucks shall be completed prior to each shift or daily using the Operators Daily Checklist, (Form 5147 or Form 5148). All repairs must be completed by authorized personnel.
- 5.8.2 Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.
- 5.8.3 Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned to service until the cause for the emission of such sparks and flames has been eliminated.
- 5.8.4 When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- 5.8.5 Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100° F) solvents shall not be used. High flash point (at or above 100° F) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used.

**5.9 SAFETY GUARDS**

- 5.9.1 High Lift Rider trucks shall be fitted with an overhead guard manufactured in accordance with OSHA 1910.182 and ANSI B56.1, unless operating conditions do not permit.
- 5.9.2 If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension manufactured in accordance with OSHA 1910.182 and ANSI B56.1.





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**5.10 FUEL HANDLING AND STORAGE**

- 5.10.1 The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1969), which is incorporated by reference as specified in Sec. 1910.6.
- 5.10.2 The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and handling of Liquefied Petroleum Gases (NFPA No. 58-1969), which is incorporated by reference as specified in Sec. 1910.6.

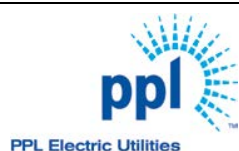
**5.11 CHANGING AND CHARGING STORAGE BATTERIES**

- 5.11.1 Battery charging installations shall be located in areas designated for that purpose.
- 5.11.2 Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.
- 5.11.3 A carboy tilter or siphon (container used for corrosive liquids) shall be provided for handling electrolyte.
- 5.11.4 When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- 5.11.5 Trucks shall be properly positioned and brake applied before attempting to change or charge batteries.
- 5.11.6 Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.
- 5.11.7 Smoking shall be prohibited in the charging area.
- 5.11.8 Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- 5.11.9 Tools and other metallic objects shall be kept away from the top of uncovered batteries.

**5.12 LIGHTING FOR OPERATING AREAS**

- 5.12.1 Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck.





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5.13 CONTROL OF NOXIOUS GASSES AND FUMES

5.13.1 Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in 1910.1000.

5.14 DOCKBOARDS

5.14.1 Portable and powered dockboards (bridge plates) shall be strong enough to carry the load imposed on them.

5.14.2 Portable dockboards shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping.

5.14.3 Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps" published by the U.S. Department of Commerce, which is incorporated by reference as specified in 1910.6.

5.14.4 Handholds or other effective means shall be provided on portable dockboards to permit safe handling.

5.14.5 Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridgeplates are in position.

5.15 TRUCKS AND RAILROAD CARS

5.15.1 The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

5.15.2 Wheel stops or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading operations.

5.15.3 Fixed jacks may be necessary to support a semitrailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.

5.15.4 Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

5.16 OPERATOR TRAINING (INITIAL)

5.16.1 SAFE OPERATION

- a. The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as



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demonstrated by the successful completion of the training and evaluation specified.

a. **WORKPLACE RELATED TOPICS**

- Surface conditions where the vehicle will be operated.
- Composition of loads to be carried and load stability.
- Load manipulation, stacking, and unstacking.
- Pedestrian traffic in areas where the vehicle will be operated.
- Narrow aisles and other restricted places where the vehicle will be operated.
- Hazardous (classified) locations where the vehicle will be operated.
- Ramps and other sloped surfaces that could affect the vehicle's stability.
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.
- Overhead / Clearance hazards.
- Fall protection.

**5.17 EVALUATION**

5.17.1 Evaluator shall verify that each operator has been trained and evaluated according to this procedure.

**6.0 REFERENCES**

- 6.1 Occupational Safety and Health Administration Standard 29 CFR 1910.178.
- 6.2 ASME/ANSI B56.1
- 6.3 PPL Electric Utilities Safety Rule Book

**7.0 REGULATORY REQUIREMENTS**

- 7.1 Occupational Safety and Health Administration Standard 29 CFR 1910.178.



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## **8.0 TRAINING / SAFETY**

8.1 Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the required training. Only persons who have the required knowledge and the training shall conduct operator training and evaluations.

### **8.2 TRAINING PROGRAM IMPLEMENTATION**

8.2.1 Trainees may operate a powered industrial truck only under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and where such operation does not endanger the trainee or other employees.

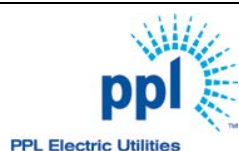
8.2.2 Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

### **8.3 TRAINING PROGRAM CONTENT**

8.3.1 Powered industrial truck operators shall receive initial training in the following topics, except in topics, which the employer can demonstrate, are not applicable to safe operation of the truck in the employer's workplace.

### **8.4 TRUCK-RELATED TOPICS**

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate.
- Differences between the truck and the automobile.
- Truck controls and instrumentation -- where they are located, what they do, and how they work.
- Engine or motor operation.
- Steering and maneuvering.
- Visibility (including restrictions due to loading).
- Fork and attachment adaptation, operation, and use limitations.
- Vehicle capacity.
- Vehicle stability.
- Any vehicle inspection and maintenance that the operator will be required to perform.
- Refueling and/or charging and recharging of batteries.
- Operating limitations.



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- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

## 8.5 REFRESHER TRAINING

8.5.1 Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. Refresher training in relevant topics shall be provided to the operator when:

- The operator has been observed to operate the vehicle in an unsafe manner.
- The operator has been involved in an accident or near-miss incident.
- The operator has received an evaluation that reveals that the operator is not operating the truck safely.
- The operator is assigned to drive a different type of truck.
- A condition in the workplace changes in a manner that could affect safe operation of the truck.

## 8.6 THIRTY-SIX MONTH EVALUATION

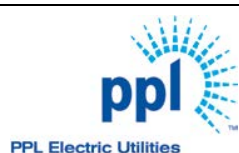
8.6.1 An evaluation of each powered industrial truck operator's performance shall be conducted at least once every 36 months.

## 8.7 PPL EU Safety Rule Book

## 9.0 COMPLIANCE AND EXCEPTIONS - N/A

## 10.0 ATTACHMENTS

- 10.1 [Form 5147 Operators Daily Checklist - Internal Combustion Engine Industrial Truck](#)
- 10.2 [Form 5148 Operator's Daily Checklist - Electric Industrial Truck](#)
- 10.3 [OSHA 29 CFR 1910.178 - Powered Industrial Trucks](#)



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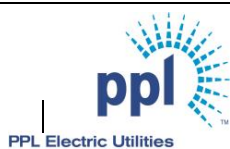
## 11.0 RECORDS RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	5/22/2017	Effective	5/22/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One-Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts. Training Specialist, John Wirth.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Expanded OSHA standard reference, added mention of fall protection.			

Rev	00	Date	07/30/12	Effective	07/30/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

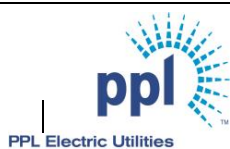


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### **1.0 PURPOSE/SCOPE**

- 1.1 This procedure covers the proper care, use and handling of ladders. Company safety rules, as well as federal regulations were used as the basis for these procedures. These procedures constitute the minimum requirements and precautions to be followed while using a ladder.
- 1.2 The primary purpose of this procedure is to establish minimum guidelines to insure that adequate measures are taken to protect personnel who work with ladders.

### **2.0 RESPONSIBILITY**

- 2.1 TD&I Safety shall be responsible for the maintenance of this procedure.
- 2.2 Management shall be responsible for implementation of this procedure as it applies to their work area.

### **3.0 APPLICABILITY**

- 3.1 Employees shall be responsible to adhere to these procedures when working with ladders.

### **4.0 TERMS AND DEFINITIONS – N/A**

### **5.0 MAIN BODY**

- 5.1 Inspection of ladders
  - 5.1.1 Personnel who perform this inspection shall be able to recognize ladder hazards.
  - 5.1.2 Inspection of ladders and attachments must be performed prior to each use, and a visual inspection of the ladder and attachments must include --
    - a) All parts shall be free from sharp edges, splinters, burrs, cracks or visible structural defects.
    - b) Steps and rungs are in place, intact, and free from grease or oil, have slip resistant surfaces and are firmly attached.
    - c) Support braces, bolts and screws are all in place and tight.
    - d) Rope is not worn or frayed.
    - e) Spreaders or other locking devices are in place and operable.
    - f) Safety feet are in place and in operable condition.



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- g) Additional auxiliary equipment, such as standoff supports, leg leveling devices are properly attached and in operable condition when in use.
- h) Proper ladder rating labels are attached and in a readable condition

5.1.3 If a ladder tips over, additional inspections shall be performed to include the following items.

- a) Inspect for side rail cracks, chips or splinters.
- b) Inspect for damage to the ladder steps.
- c) Check all rung-to-side rail connections.
- d) Check rivets and other fastening items for shear.

5.1.4 Ladders with defects shall be withdrawn from service for repair or disposal and tagged or marked as "Dangerous, Do Not Use."

5.1.5 The rungs of an individual-rung fixed ladder shall be designed so that the foot cannot slide off the end.

5.1.6 Side rails of a fixed ladder that are used as a climbing aid shall afford adequate gripping surface without sharp edges, splinters, or burrs.

5.1.7 Attachment 1 - Ladder Inspection Checklist form is one method of documenting inspection. Another method is to affix an inspection sticker directly to the ladder.

### **5.2 Care of Ladders**

5.2.1 Ladders shall be maintained in good, usable condition at all times.

5.2.2 Ladders shall be stored in a location where the ladder does not create additional hazards.

5.2.3 Ladders should be stored in dry areas with moderate temperatures.

5.2.4 Ladders shall be properly secure when in storage to prevent the ladder from becoming an additional hazard.

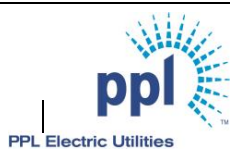
5.2.5 Fixed ladders shall be painted or otherwise constructed to resist corrosion and rusting when location demands.

### **5.3 Use of Ladders**

5.3.1 Select the proper ladder for the intended application. All portable ladders are rated by how much weight they can hold. The weight limit includes the employee and any tools or equipment in use.

5.3.2 Step ladders longer than 20 feet shall not be used.





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- 5.3.3 Single ladders longer than 30 feet shall not be used.
- 5.3.4 Two section extension ladders longer than 60 feet shall not be used.
- 5.3.5 When accessing manholes and vaults, employees shall use the following:
- a) A portable ladder when:
    - The space is 15 ft deep or less **and**,
    - does **not** have NESC access restrictions
  - b) A fixed ladder with an approved ladder extension when:
    - The space is listed in one of the fixed ladder location tables in DDI N-105
    - The space is greater than 15 ft deep **or**,
    - has NESC access restrictions
- Note:** For NESC access restrictions please refer to DDI N-105 Confined Space Tools & Equipment.
- 5.3.6 Portable ladders shall be used in the application for which the ladder was designed.
- 5.3.7 Single and Extension ladders shall, where possible, be used at a pitch that the horizontal distance from the top support to the foot of the ladder is one quarter of the working length of the ladder.
- 5.3.8 Portable ladders shall be used on non-slippery, stable, and level surfaces, unless secured or stabilized to prevent displacement.
- 5.3.9 Step ladders shall be placed in the fully open position with all four legs on the ground surface. The spreader or locking device shall be in the locked position to securely hold the front and back of the step ladder in the open position.
- 5.3.10 When ladders are used where the employee or the ladder could contact exposed energized parts, a nonconductive ladder shall be used.
- Note:** Employees shall only use portable metal/conductive ladders to perform specialized work when near electrical facilities where induced voltage would create a greater hazard if a non-conductive ladder is used (such as a 500 kV substation). Some fiberglass ladders have a metal core which could build up a significant charge.
- 5.3.11 Ladders shall not be used by more than one person at a time unless designed for this application.
- 5.3.12 Portable ladders shall be placed so the side rails have a secure footing.



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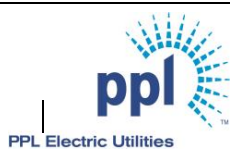
- 5.3.13 Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked, locked, guarded or barricades in place.
- 5.3.14 Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height.
- 5.3.15 Short ladders shall not be spliced together to provide long sections unless the ladder is designed for this purpose such as a stack ladder.
- 5.3.16 Employees shall not use the top step or cap of a stepladder as a step unless it was designed for that purpose.
- 5.3.17 Employees shall not move, shift, or extend a ladder while occupied.
- 5.3.18 Employees shall use 3 points of contact and face the ladder while ascending or descending the ladder.
- 5.3.19 Employees shall not carry any object or load that could cause them to lose balance while ascending or descending the ladder.
- 5.3.20 Employees working from a properly secured straight or extension ladder shall wear a proper body positioning strap securely attached to the ladder or a fall arrest harness with a lanyard attached to an anchorage point independent of the ladder.
- 5.3.21 Employees working from an unsecured straight or extension ladder (ladder that is not properly secured) must maintain 3-points of contact and proper body position when working from the ladder or shall wear a fall arrest harness with a lanyard attached to an anchorage point independent of the ladder.

**Note:** Proper body position on a ladder requires the employee to keep his/her belt buckle between the side rails of the ladder at all times

- 5.3.22 On two-section extension ladders, the minimum overlap for the two sections in use shall be as follows:

<u>Size of Ladder</u>	<u>Overlap (feet)</u>
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

- 5.3.23 To gain access to a roof (or other elevated walking/working surface) using a ladder, the top of the ladder must extend a minimum of 3 feet above the point of support and properly secured.



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### **6.0 REFERENCES**

- 6.1 PPL Electric Utilities Safety Rule Book
- 6.2 MST (Mandated Safety Training) 215 – Ladder Safety

### **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA 29 CFR 1910 Subpart D – Walking-Working Surfaces

### **8.0 TRAINING / SAFETY**

- 8.1 PPL Electric Utilities Safety Rule Book
- 8.2 ER0010 Training – General Work Procedures in Substations

### **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

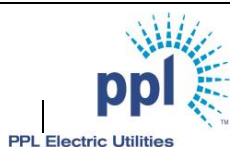
### **10.0 ATTACHMENTS**

- 10.3 Ladder Inspection Checklist (Attachment 1)

### **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Electric Utilities Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### **12.0 RECORD OF REVISIONS**



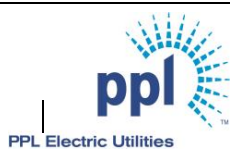
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<b>Rev</b>	02	<b>Date</b>	02/04/2021	<b>Effective</b>	04/22/2021
<b>Prepared by:</b>	Dalton Shorts, EU Safety Operations				
<b>Reviewed by:</b>	Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, and Tyler Honor				
<b>Approved by:</b>	Chuck Wood, Manager-Safety Operations				
<b>Revision Comments:</b>	Added "and attachments" to 5.1.2. Added 5.3.5. Reworded 5.3.8 and 5.3.16.				

<b>Rev</b>	01	<b>Date</b>	01/17/2017	<b>Effective</b>	3/17/2017
<b>Prepared by:</b>	Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations				
<b>Reviewed by:</b>	Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.				
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations				
<b>Revision Comments:</b>	Reviewed to ensure compliance with OSHA 29 CFR 1910 Subpart D (Walking/Working Surfaces). Changed the title from Portable Ladders to Ladders now this procedure includes fixed ladders.				

<b>Rev</b>	00	<b>Date</b>	07/25/2012	<b>Effective</b>	07/25/2012
<b>Prepared by:</b>	David Hughes				
<b>Reviewed by:</b>	Jacque Creamer, Adam Frederick, Richard Horan				
<b>Approved by:</b>	Barry Downes				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				

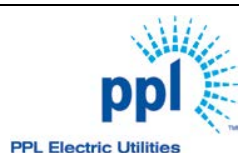


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**ATTACHMENT 1 – LADDER INSPECTION CHECKLIST**

<b>INSPECTION</b>		
Data of Inspection:	Name of Inspector:	
Department/Shop:	Ladder Identification Number:	
Type of Ladder: ( ) Extension ( ) Step ( ) Fixed		
Construction of Ladder: ( ) Wood ( ) Metal ( ) Fiberglass		
<b>MONTHLY INSPECTION</b>		
1. Are rungs, cleats or steps intact and free from damage?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Are rails free from cracks or splitting?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Is the ladder free from the accumulation of oil, grease or other material that may create a slipping hazard?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Is the ladder free from protruding objects that could cause injury?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. If ladder is equipped with safety device is the device secured and operating properly on the ladder?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. If ladder is equipped with locking device, is the service intact and functional?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. If fixed ladder is equipped with cages, are cages intact and free from broken weld?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Is the ladder free from any other defects that may impair its safe usage?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>COMMENTS</b>		
Date ladder was repaired and returned to service:		

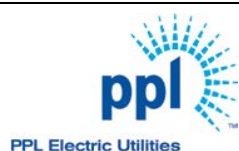


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**SAFETY PROCEDURE**  
**EYEWASH AND SHOWER EQUIPMENT**

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## SP 36 SAFETY PROCEDURE EYEWASH AND SHOWER EQUIPMENT

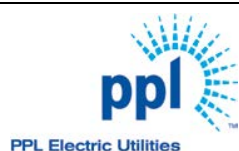
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### 1.0 PURPOSE/SCOPE

- 1.1 Establish safety requirements for the installation, inspection, maintenance, and use of **self-contained** and **plumbed** emergency **eyewash** and **shower** equipment.
- 1.2 Define the roles and responsibilities of management, Environmental Health & Safety, and employees for the installation, inspection, maintenance, use, and reporting process in regard to the use of emergency **eyewash** and **shower** equipment.
- 1.3 Define installation, inspection, maintenance, and proper use of emergency **eyewash** and **shower** equipment for the emergency treatment of the eyes or body of a person who has been exposed to hazardous materials.

### 2.0 RESPONSIBILITY

- 2.1 Management
  - 2.1.1 Make emergency **eyewash** and/or **shower** units available to employees who are working in areas where the units are required.
  - 2.1.2 Work with Environmental Health & Safety, as necessary, to identify the need and determine the type and location of the units.
  - 2.1.3 Ensure that manufacturer operating instructions are placed next to emergency **eyewash** and/or **shower** units.
  - 2.1.4 Inspect and maintain all **self-contained** emergency **eyewash** and **shower** units.
- 2.2 Employees:
  - 2.2.1 Wear personal protective equipment (PPE), as needed, as a defense against flying solid particles and splashing hazardous liquids. PPE may include eye protection, face protection, hand protection, foot protection, and protective clothing.
  - 2.2.2 Keep material safety data sheet/safety data sheets (MSDS/SDS) on hand when working with or near chemicals, and know the first aid procedures that must be taken to ensure proper flushing of those chemicals.
  - 2.2.3 Know location and operation of **eyewash** and **shower** units before commencing work. Refer to manufacturer operating instruction for proper use of the equipment.
  - 2.3.4 Maintain a clear path to ensure that units can be safely reached within 10 seconds.



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2.3.5 Report all injuries to supervisor before the end of shift. Request medical attention if needed.

2.3.6 Report to supervisor any unusual observations (e.g., leaks, missing nozzle protectors, damage) of **eyewash** and **shower** units. Ensure that the eyewash station is functioning properly prior to the start of the job.

### 2.2 Safety Professional

2.2.1 Work with managers, as necessary, to identify the need and determine the type and location of the emergency **eyewash** and/or **shower** units

## 3.0 APPLICABILITY

3.1 Establish safety requirements for the installation, inspection, maintenance, and use of **self-contained** and **plumbed** emergency **eyewash** and **shower** equipment.

## 4.0 TERMS AND DEFINITIONS

4.1 **Eyewash** unit – A device used to provide fluid to irrigate and flush the eyes.

4.2 **Flushing Fluid** – Potable (i.e., suitable for drinking) water, chemically-treated water, preserved buffered saline solution or other medically acceptable solution manufactured and labeled in accordance with applicable government regulations.

4.3 **Manufacturer Recommendation** – Recommendations from a manufacturer to ensure proper operation and longevity of its product.

4.4 **Permanent** – Fixed or remaining in position.

4.5 **Plumbed** unit – An emergency eyewash or shower unit connected to a water system.

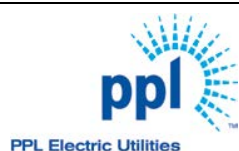
4.6 **Preservative** – A chemical mixed with the water of non-**plumbed** emergency **eyewash** and **shower** units to prevent the growth of bacteria, fungi, and algae.

4.7 **Regulatory Requirement** – A requirement that is necessary to meet ANSI and/or OSHA standards.

4.8 **Sediment** – Particles that can be transported by fluid flow and deposited as a layer within the liquid.

4.9 **Self-Contained** – Requiring no external connections (such as water lines) in order to operate properly. *Self-Contained* refers to both pressurized and non-





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pressurized units that contain flushing fluid and that must be refilled after each use. Self-contained units may be portable.

- 4.10 **Shower** – An assembly consisting of a showerhead controlled by a stay open valve and operated by a control valve actuator.

## **5.0 MAIN BODY**

### **5.1 Installation Requirements**

- 5.1.1 Emergency **eyewash** and **shower** equipment shall be located in an accessible area which:

- a. Requires no more than 10 seconds/55 feet to reach.
- b. Is located on the same level as the hazard.
- c. Enables a path of travel free of obstacles.

**NOTE:** An emergency **eyewash** and/or **shower** unit shall be located within 25 feet of each battery handling and charging facility.

- 5.1.2 Where the possibility of freezing conditions exists, equipment shall be protected from freezing, or freeze-protected equipment shall be installed.
- 5.1.3 Each **permanent** emergency **eyewash** and **shower** location shall be identified with a well-positioned, highly visible sign. The area around the unit shall be well lighted.
- 5.1.4 **Plumbed** emergency **eyewash** and **shower** units shall be installed according to **regulatory requirements** and manufacturer installation instructions.
- 5.1.5 **Plumbed** units are expected to deliver clear - free of debris - tepid water with temperatures between 60 °F and 100 °F. To allow business lines time to conduct their studies and plan corrections, effective January 1, 2015, each business line shall have in place temperature controlled devices on **plumbed** units to ensure tepid water temperatures are maintained.

This does not apply to **self-contained** units.

- 5.1.6 Each **plumbed shower** shall be capable of delivering **flushing fluid** at the rate of 20 gallons-per-minute for 15 minutes.
- 5.1.7 Each **plumbed** and **self-contained** eye wash shall be capable of delivering **flushing fluid** at the rate of 0.4 gallons-per-minute for 15 minutes. A **self-contained** eye wash unit shall contain a minimum of 9 gallons of fluid.



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5.2 Inspection and Maintenance

- 5.2.1 All **eyewash** and **shower** units shall be inspected to meet **regulatory requirements** and **manufacturer recommendations**. A PPL EU - approved Emergency Shower & Eye Wash Test Record tag shall be affixed to the unit. The person performing the inspection shall write the date of inspection and his/her initials on the tag using a **permanent-ink** marker or pen.



(Catalog ID 0000928682)

The frequency of inspections is summarized in the table below:

	Plumbed Units	Self-Contained Units
<b>Inspection</b>	Weekly	Monthly
<b>Change Flushing Fluid</b>	N/A	Per manufacturer recommendation

(Annual inspection requirements are met by the monthly/weekly inspections.)

5.2.2 **Plumbed Units**

- a. Inspections shall be performed weekly. Tasks include:
- Activate for a period long enough to verify operation, maintain a minimum temperature of 60 degrees, and ensure that **flushing fluid** is available and clear of **sediment**.
  - Open valve to full open position and ensure that valve remains fully open without requiring use of operator's hands.
  - Ensure that protective dust covers are installed on **eyewash** nozzles for protection from airborne contaminants, and automatically release with water pressure.
  - Ensure that there are no plumbing leaks around any connections.
  - Ensure that water flow pattern is equal from each **eyewash** nozzle.



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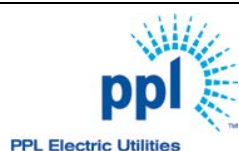
- Ensure that the **eyewash** basin is clean and does not create additional hazards when the unit is placed into service.
- Ease of operation
  - 1) Ensure that, if the **eyewash** unit is equipped with a protective cover over the entire basin, that the cover opens fully when the unit is activated.
  - 2) Ensure that foot pedal, shower valve, or eyewash valve operates freely.
- h) Test for proper operation of monitoring/notification system (if unit is equipped).

**5.2.3 Self-Contained Pressurized Units**

- a. Inspections shall be performed once-per-month, or more frequently when specified by the manufacturer. Tasks include:
  - Ensure that the pressure level meets **manufacturer recommendation**.
  - Ensure that seals are in-place and in good condition.
  - Activate the unit to ensure **flushing fluid** flows freely and that:
    - 1) Nozzles are unobstructed.
    - 2) Full body flushing hose is unobstructed.
    - 3) Protective dust covers are installed on **eyewash** nozzles for protection from airborne contaminants, and automatically release with water pressure.
  - Ensure that tank fluid is filled to the proper level.
  - If using a **preservative**, follow the **manufacturer recommendation**. On units that contain water without **preservative**, drain the tank fluid and refill monthly.

**5.2.4 Self-Contained Non-Pressurized Units**

- a. Inspections shall be performed once-per-month, or more frequently when specified by the manufacturer. Tasks include:



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- Follow manufacturer instructions for inspection, cleaning, and filling.
- If using a **preservative**, follow the **manufacturer recommendation**. On units that contain water without **preservative**, drain the tank fluid and refill monthly.
- List date that the unit was filled with water/preservative and the date the contents needs changed, following all manufacturer specifications.

### 6.0 REFERENCES

- 6.1 American National Standards Institute (ANSI) Z358.1 – 2014.
- 6.2 OSHA 29 CFR 1910.151 (c).
- 6.3 OSHA 29 CFR 1926.441 (a) (6).
- 6.4 “Tepid Water Requirements for Emergency Equipment,” p. 59, Safety+Health, Vol. 178, No. 1, National Safety Council, July 2008.

### 7.0 REGULATORY REQUIREMENTS

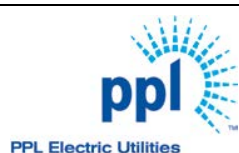
- 7.1 OSHA 29 CFR 1910.151 (c).
- 7.2 OSHA 29 CFR 1926.441 (a) (6).

### 8.0 TRAINING / SAFETY

- 8.1 Ensure that employees, who work in areas where emergency **eyewash** and/or **shower** units are required, know the proper use of such equipment prior to commencing work. (Employees should follow the manufacturer’s operating instructions.)

### 9.0 COMPLIANCE AND EXCEPTIONS – N/A

### 10.0 ATTACHMENTS - N/A



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## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	05/12/2017	Effective	05/12/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Added distance of travel figure, updated ANSI Standard version, added term safety data sheet (SDS)			

Rev	00	Date	07/19/12	Effective	07/19/12
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

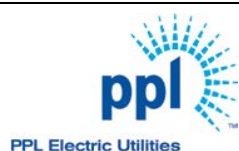


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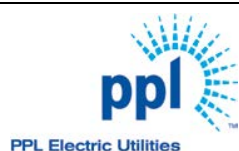
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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to assure that PPL employees have had an operational instruction on the specific manufacturer's operating manual and instructions prior to using specific equipment (PPL Electric Utilities owned, leased, rented, or borrowed). This procedure applies to equipment in which OSHA standards require training, and also to the manufacturer's safety aspects of operating other unique equipment. This will assure that employees have the basic knowledge and capability to operate each specific piece of equipment safely.
- 1.2 Equipment with unique safety requirements that necessitate the operational instruction includes: aerial devices (i.e. bucket trucks, powered lifts), powered industrial truck (i.e. forklifts), cranes (including line truck booms), earth moving equipment (i.e. bulldozers, backhoes, graders, pan scrapers, ditch digging equipment, cable laying equipment), line and cable tensioners, digger auger equipment, and all-terrain vehicles. It does not include operation of vehicles for which a person is licensed.

## **2.0 RESPONSIBILITY**

- 2.1 Technical Training is responsible to develop and maintain the documentation sheets, coordinating with Transportation Services to identify operational differences
- 2.2 Technical Training is responsible to develop and maintain the PQS tracking number, and the reports:
  - 2.2.1 Listing each employee and the specific equipment for which he/she has received operational instruction,  
And,
  - 2.2.2 Listings, by specific pieces of equipment, of all employees who have received operational instruction for that equipment.  
"Equipment Operational Instruction Checklist" forms, with attendance rosters attached (as applicable), are to be sent to Technical Training.
- 2.3 Transportation Services is responsible to:
  - 2.3.1 Identify new/renovated PPL Electric Utilities equipment with unique operating characteristics, as compared to the current fleet.
  - 2.3.2 Provide Technical Training lists of current and new equipment.



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2.3.3 Transportation Services is responsible to provide users of PPL Electric Utilities equipment and Technical Training the manufacturer's operation manuals/instruction for PPL Electric Utilities equipment.

### **3.0 APPLICABILITY**

3.1 This procedure is to assure that PPL employees have had an operational instruction on the specific manufacturer's operating manual and instructions prior to using specific equipment (PPL Electric Utilities owned, leased, rented, or borrowed).

### **4.0 TERMS AND DEFINITIONS**

4.1 **JPM (Job Performance Measure)** – A JPM is a PPL checklist that is designed to monitor employees' skill activities in a fair and unbiased manner.

### **5.0 MAIN BODY**

5.1 Employees may not operate equipment unless they have received operational instruction from a competent person, using the manufacturer's operations manual/instructions, on that specific model of equipment.

5.2 Any person who is competent (familiar with the operational characteristics of, and has operated, the specific model of equipment) may conduct the operational instruction. This may include PPL Electric Utilities employees, manufacturers' representatives, equipment-leasing representatives, and other equipment owners.

5.2.1 The PPL Electric Utilities representative requesting non-PPL Electric Utilities equipment shall assure the vendor or owner includes the manufacturer's operation manual/instructions with the equipment.

5.3 The person conducting the operational instruction shall use the specific manufacturer's operating manual/instructions in conjunction with the specific model of equipment, following the PPL Electric Utilities documentation form checklist. The checklist will assist the person conducting the operational instruction to emphasize the safety characteristics of a category of equipment.  
(See Section – Documentation of Training Orientation.)

EXAMPLE: If one aerial bucket truck has a control that rotates the boom counter-clockwise located on the left of the panel, and another aerial





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device has the counter-clockwise control on the right side of the panel, employees must receive operational instruction for each of these aerial devices. Each of these bucket trucks will have a unique computerized tracking number.

- 5.3.1 It is the responsibility of the person conducting the operational instruction to assure the employee(s) understand the manufacturer's operating manual/instructions and safety aspects for the specific model of equipment. For non-employees conducting the operational instruction, the supervisor is to stress the purpose of this procedure with that person.
- 5.3.2 For employee(s) who are not experienced in operating a category of equipment, the operational instruction shall include hands-on with the specific model of equipment.
- 5.3.3 For employees who are experienced in operating a category of equipment, the scope of the operational instruction for a specific model may be customized for assurance of understanding the manufacturer's manual/instructions, via demonstration or verbalization. The person conducting the operational instruction is responsible to define this scope. This customization decision is dependent on the prior training/experience of the employee(s), the complexity, and unfamiliarity, of the operational characteristic. At a minimum, the instruction requires review of the manufacturer's operation instruction along with an operational review of the specific model of equipment. However, if the person administering the instruction does not receive satisfactory feedback from the employee, a hands-on instruction is required.

**5.4 DOCUMENTATION OF TRAINING ORIENTATION**

- 5.4.1 The person conducting operational instruction is responsible to have proper documentation completed for the employee(s) on the specific piece of equipment.
- 5.4.2 If the person conducting the operational instruction is a not a PPL Electric Utilities employee, the supervisor or person in charge is responsible to assure documentation is completed.
- 5.4.3 Each category of equipment shall have a training documentation form designed for that category of equipment (i.e. aerial device, crane, tensioner, etc.).
- 5.4.4 The documentation form shall either have an individual employee's name recorded on the form, or an attendance roster attached for a group of employees.



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- 5.4.5 Each specific type of equipment within a category will have a unique tracking number associated with it.

EXAMPLE: In an aerial device category there may be 20 pieces of equipment with different and specific operating characteristics; in this example there would be 20 PQS tracking numbers assigned to that category. PQS numbers will be assigned by Technical Training for new equipment identified by Transportation Services.

- 5.4.6 For rental or other equipment, the person requesting the equipment shall identify if the equipment is a PPL Electric Utilities untracked (no PQS number) model. If so, the person shall request a PQS number from Technical Training for that specific model.

## **6.0 REFERENCES**

- 6.1 OSHA CFR 1910 General Industry Standards, and 1926 Construction Standards
- 6.2 PPL EU Safety Rule Book


## **7.0 REGULATORY REQUIREMENTS - N/A**

## **8.0 TRAINING / SAFETY**

- 8.2 Employees may not operate equipment unless they have received operational instruction from a competent person, using the manufacturer's operations manual/instructions on that specific model of equipment.
- 8.3 Considering using/completing a JPM (Job Performance Measure) to assist with documenting employee training on operating equipment use.

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS – N/A**

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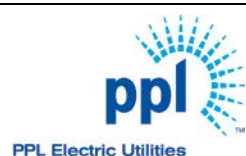
## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	07/17/2017	Effective	07/17/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure all links are functioning properly.			

Rev	00	Date	07/30/2012	Effective	07/30/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

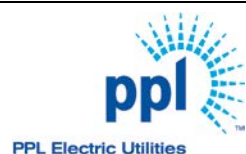


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### 1.0 PURPOSE/SCOPE

- 1.1 The purpose of this procedure is to increase vehicle safety by:
  - 1.1.1 Providing specific actions when moving a vehicle from a parked position,
  - 1.1.2 Providing specific actions when backing vehicles,
  - 1.1.3 Providing a method to look for hazards and then controlling the hazards when vehicle is in motion.
- 1.2 This procedure will enable employees to understand **"Circle for Safety"** when driving various company vehicles, or driving a personal vehicle on company business.

### 2.0 RESPONSIBILITY-N/A

### 3.0 APPLICABILITY

- 3.1 This procedure applies to operators of all vehicles.

### 4.0 TERMS AND DEFINITIONS

- 4.1 Permanently obstructed view to the rear - a vehicle that has a rear window that does not allow driver a view of the area to the rear of the vehicle (such as the windows in "bread vans") or has vehicle mounted equipment (such as boom pedestals, "headache" protective devices, tool bins) that eliminates part, or all, of the view out the back window of the vehicle.
- 4.2 Temporary obstruction - it is an obstruction that eliminates part, or all, of the view out the back windows of the vehicle and is not mounted on the vehicle. This includes snow/rain on a back window preventing the full visibility, or material loaded in the vehicles (such as boxes loaded in an SUV) that eliminate part, or all of the view out the back windows of the vehicle.
- 4.3 Circle for Safety - A 360 degree visual inspection around your vehicle looking for and identifying any obstructions or possible hazards that may be struck when moving a vehicle. Look under the vehicle as well to ensure no objects rolled or were placed under the vehicle.



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### 5.0 MAIN BODY

#### 5.1 GENERAL INSTRUCTION

- 5.1.1 Before moving a vehicle the driver must assure action is taken to look for hazards in the intended travel direction of the vehicle, and then control or remove those hazards - **"Circle for Safety"**. To properly accomplish this evaluation, a person must be outside the vehicle and physically view the areas of the vehicle that would be exposed to a hazard. The person must refocus their "mindset" to driving from whatever other task they were performing.
- 5.1.2 Look for hazards during your "Circle for Safety": When an employee is starting from a parked position, the employee must physically view all portions of the vehicle and any trailers/equipment being towed that would be exposed to a hazard. Next the employee must then evaluate the intended travel path of the vehicle.
- 5.1.3 The driver must conduct the check for hazards from outside the vehicle. This can usually be accomplished by the driver looking at their vehicle and the area where the vehicle sets upon the initial walk up to the vehicle. The driver is responsible to move around the vehicle to view and assure there is a clear path for the vehicle for all hazards areas for the type of vehicle being driven. The driver may also use other persons to help look at areas of the vehicle and identify hazards. However the driver is responsible for the identification, evaluation, and control of all vehicle hazards.
- a) For example, prior to moving the vehicle, the operator must perform a 360 degree walk around or, in rare cases, perform a 360 degree visual inspection around the vehicle. This includes a minimum the following:
- The undercarriage,
  - Either the front, or rear, of the vehicle,
  - The travel path (either forward or rearward) and,
  - The "driver's" side of the vehicle.
- 5.1.4 A 360-degree walk around the vehicle is required unless physical limitations prevent a safe walk around the vehicle, in which case, a 360 visual inspection must be performed. This is required prior to moving any company vehicle or personal vehicles used on company business.
- 5.1.5 Hazards include:
- a) Undercarriage hazards, such as holes, roadway drop-offs, stumps, objects that could be run-over and be damaged or cause damage to



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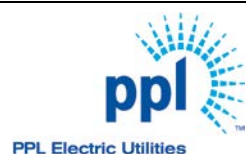
the vehicle, changes in grade where the vehicle could "bottom-out", items that may have been dropped or blown under the vehicle, children or animals hiding under the vehicle, etc.

- b) The sides of the vehicle - hazards that could scrape the vehicle or are leaning against the vehicle. Vehicles hazards include items such as mailboxes, guard rails, tree branches, etc.
- c) Materials, tools and equipment in or on your vehicle – hazards such as materials not properly secured that may fall from the vehicle, doors or bin doors that are not properly secured (utilize the slide lock for proper securement of bin doors), booms that are not properly stowed, etc.
- d) Clearance for making initial turns - both for the vehicle and any towed items. This also includes assuring there is sufficient room for the "opposite corner" of the vehicle when making initial turns from the parked position either forward or rearward.
- e) Overhead clearance - to verify the height of the vehicle (including beacons, antennas, stowed booms, height of loaded material, etc.), and that there is clearance from such items as garage doors, tree limbs, wires, substation structures, etc.
- f) The intended travel path: to look for objects that could cause a hazard for the undercarriage, the sides, the top of the vehicle, or the front of the vehicle. It also includes hazard that could enter the travel path of the vehicle such as people, animals, or other vehicles.

**5.1.6 Backing Procedure**

- a) When backing Company vehicles or personal vehicles used on company business 1) from a parked position, 2) when in transit and the vehicles must be backed-up, or 3) when it is stopped and then required to back (such as sitting in a non-moving vehicle talking on the radio and then must backed-up, or re-positioning at the job-site) the first choice of the driver is to request another person to assist with backing the vehicle.

- 5.1.7** The driver is responsible to request assistance for the backing task, and to assure that there is proper communication between the assistant and the driver including the driver's intent to where they will back the vehicle. The assistant, is responsible to identify any hazards or obstructions and communicate to the driver the hazards and controls - including directing the driver to stop when necessary to prevent damage.



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5.1.8 When a driver is alone and must back a Company vehicle the driver shall **"Circle for Safety"**.

- a) When conducted from a parked position the driver will "Circle for Safety" on his/her initial approach to the vehicle.
- b) When a driver is in transit or stopped and must position the vehicle by backing up, the driver shall determine if it safe to exit the vehicle. In most cases it would not be safe to exit the vehicle when backing into a parking space in a parking lot.

For example: Where you may get out of your vehicle prior to backing is in a right-of-way and visibility is limited for the location in which you want to back the vehicle. Drive past the location you want to back into, stop, exit the vehicle and evaluate hazards for the area you want to back into. If it is determined safe to exit the vehicle the driver must walk to the rear of the vehicle to identify any possible obstructions in the travel path of the vehicle, remove or mitigate the hazard, then re-enter the vehicle and perform the backing task. If there are hazards that cannot be removed or mitigated, STOP, do not back into the area. Find an alternative location or position for your vehicle.

## **6.0 REFERENCES**

- 6.1 PPL Electric Utilities Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS – N/A**

## **8.0 TRAINING/SAFETY – N/A**

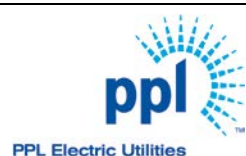
## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS – N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).





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<b>Rev</b>	01	<b>Date</b>	06/07/2017	<b>Effective</b>	06/07/2017
<b>Prepared by:</b>		Supervisor - Safety Operations: Jared Dyer			
<b>Reviewed by:</b>		Safety Professionals: Steve Mondschein, Debbie Sweinhart			
<b>Approved by:</b>		Manager Safety: Brian Matweecha			
<b>Revision Comments:</b>		Changed terminology from "Clear a Path" to "Circle for Safety". This was requested by the Field Managers. The most current safety rule book (dated May 2017) was also updated to reflect these changes.			

<b>Rev</b>	00	<b>Date</b>	07/18/2012	<b>Effective</b>	07/18/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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## **1.0 PURPOSE/SCOPE**

- 1.1. Establish requirements to identify jobsite hazards, communicate those hazards to personnel, and implement hazard controls/avoidances.
- 1.2. Define the required content of a tailboard, so as to prevent events through hazard elimination or control.
- 1.3. Define the tailboard job safety planning process, which includes identification of jobsite hazards, the communication among personnel, the implementation of hazard control/avoidance, and the documentation requirements.
- 1.4. Define the tailboard roles and responsibilities of supervisors, person-in-charge, and employees.

## **2.0 RESPONSIBILITY**

### **2.1 Supervisors**

- 2.1.1 Provide general direction to the crews, person-in-charge, and/or designated employee (as appropriate).
- 2.1.2 Address any specific safety issues associated with the work at a work assignment meeting.
- 2.1.3 Choose, at his/her discretion, to have the total crew in attendance at the work assignment meeting when he/she desires to provide additional safety information or review specific incidents that may have bearing on the work to be performed.

**NOTE:** A work assignment meeting is not part of the tailboard, even though it may contain safety information pertinent to the job.

- 2.1.4 Designate person-in-charge to identify who will need to conduct and facilitate the actual tailboard at the job site.
- 2.1.5 Review the completed tailboard forms, submitted by the person-in-charge and/or designated employee, and retain forms for a minimum of three (3) years.

### **2.2 Person-in-Charge/Designated Employee**

- 2.2.1 Keep the tailboard brief if the work involved is routine and if the work crew members can reasonably be expected to recognize and control/avoid the hazards involved in the job. Otherwise, a more extensive tailboard shall be conducted. In either case, the tailboard shall be documented, and shall include the content specified this procedure.



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### **2.3 Employee**

- 2.3.1 Participate in the tailboard to help identify hazards and recommend how to control, avoid, and/or eliminate those hazards.
- 2.3.2 Participate in the tailboard and provide feedback to the person-in-charge and to each other.
- 2.3.3 Adhere to the applicable safety rules and procedures, and inform the person-in-charge when new hazards are identified.

**NOTE:** An employee working alone needs to conduct a tailboard and document.

## **3.0 APPLICABILITY**

- 3.1 This procedure establishes requirements to identify jobsite hazards, communicate those hazards to personnel, and implement hazard controls/avoidances.

## **4.0 TERMS AND DEFINITIONS**

- 4.1 Designated employee – An employee who is designated by the supervisor to perform specific duties under the terms of this procedure and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

**NOTE:** Depending on the circumstances, the designated employee and person-in-charge may be the same individual

- 4.2 Event – An occurrence in an unintended sequence of actions which results in, or has potential to result in death, injury, property damage, productivity loss and/or monetary loss. Events comprise all incidents and potential incidents.
- 4.3 Hazard – An existing or potential condition that can result in death, injury, property damage or other loss, and is affected by the equipment, the elements in the environment, and/or people.
- 4.4 Incident – An event in which there is injury, illness, or damage.
- 4.5 Joint tailboard – A tailboard conducted by the person-in-charge among multiple crews working at the same jobsite. A joint tailboard is required in order to assure that one crew's job plan does not create additional hazards for another, and/or to ensure that such hazards are jointly controlled/avoided.
- 4.6 Person-in-charge – A person who is designated by the supervisor to perform specific duties under the terms of this procedure, including conducting and documenting tailboards.



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- 4.7 Personnel – Employees, non-employees, and crew members. Personnel may include visitors, contractors, and auditors at the jobsite.
- 4.8 Tailboard (or Job Safety Planning) – A meeting or job briefing conducted by the person-in-charge prior to the beginning of work to discuss hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements. Information derived from a tailboard is used to prevent events. Tailboards provide more individual control over the work environment through hazard elimination or control. Person-in-charge may leave another crew member conduct the tailboard while being present facilitating and coaching the employee.
- 4.9 Tailboard form – A form used to document the tailboard information discussed with all personnel at the jobsite. The tailboard form shall be filled out as the tailboard occurs, accurately reflecting the communication that occurred during the tailboard.
- 4.10 Work assignment meeting – A meeting held by the supervisor or designee to discuss the work assignments for a particular job. A work assignment meeting is not part of the tailboard, even though it may contain safety information pertinent to the job.

## **5.0 MAIN BODY**

- 5.1 Jobsite Tailboards shall include:
  - 5.1.1 Personnel assignment
  - 5.1.2 The plan for performing the job steps/work procedures
  - 5.1.3 Hazards associated with each job step, and:
    - a. special precautions
    - b. energy source controls
    - c. personal protective equipment requirements
  - 5.1.4 Strategy to eliminate or control each hazard
  - 5.1.5 Resource needed to perform the job is available:
    - a. Tools
    - b. Equipment
    - c. PPL Safety Rule Book.
    - d. Procedures applicable to the job.
    - e. Job Safety Analysis (JSA's) applicable to the job.



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- f. Other documents are available for the control or avoidance of job hazards.
- 5.2 All crew members shall participate in the tailboard and understands his/her responsibilities.
- 5.3 Additional tailboards shall be conducted if significant changes which might affect the safety of the employees occur during the course of the work.
- 5.4 All tailboards shall be documented on the tailboard sheet, and copy to submit to supervisor.
- 5.5 Tailboard Process
  - 5.5.1 After the work assignment meeting but prior to moving to jobsite, it may be necessary for the person-in-charge to discuss driving and loading material information, hazards and necessary controls, etc.
  - 5.5.2 Person-in-charge completes the general information at the top of the tailboard form.
  - 5.5.3 Person-in-charge examines the jobsite.
  - 5.5.4 Person-in-charge chooses safe jobsite location for the tailboard, and gathers personnel together.
  - 5.5.5 Person-in-charge and all crew members:
    - a. Outline specific steps of the job. (A step indicates what is done, not how it is done.)
    - b. Identify hazards associated with the specific job steps. Take into consideration:
      - special precautions
      - energy source controls
      - personal protective equipment requirements
    - c. Establish methods to control/avoid each hazard. Hazards can be controlled/avoided by:
      - Eliminating the hazard
      - Creating a barrier
      - Changing the plan to avoid the hazards
      - Utilizing equipment that blocks personal contact



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- 5.5.6 Person-in-charge discusses with the crew the control/avoidance of each hazard, and ensures that each person understands his/her role.
- 5.5.7 Person-in-charge documents the meeting on the tailboard form:
  - a. the specific steps involved with the job
  - b. the hazards associated with each specific job step, such that each hazard coincides with a specific job step
  - c. the hazard controls/avoidances for each specific job step

**NOTE:** Employees working alone are required to document their tailboard.

- 5.5.8 Person-in-charge shall conduct a joint tailboard when multiple crews work at the jobsite, and the work of one crew may affect the safety of another crew.
- 5.5.9 When a step of the job is changed from the initial job plan or an additional hazard is identified at the jobsite the person-in-charge shall:
  - a. Review the related tasks.
  - b. Identify and control/avoid the hazard as necessary
  - c. Update the tailboard form.
- 5.5.10 At the end of the work shift, the person-in-charge shall submit all tailboard documentation to the supervisor.

**NOTE:** Departments may have a specific tailboard or pre-job planning procedure that match the requirements of this procedure, but that also have additional requirements.

## **6.0 REFERENCES**

- 6.1 PPL E U Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 29 CFR 1910.269 Electric Power Generations, Transmission, and Distribution](#)

## **8.0 TRAINING / SAFETY - N/A**



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## 9.0 COMPLIANCE AND EXCEPTIONS - N/A

## 10.0 ATTACHMENTS

- 10.1 Attachment A - EU Tailboard Booklet Cover
- 10.2 Attachment B - EU Tailboard Documentation Form

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	07/13/2017	Effective	07/13/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure links are created to OSHA regulations.			

Rev	00	Date	04/11/2013	Effective	05/01/13
<b>Prepared by:</b>		Jacque Creamer			
<b>Reviewed by:</b>		Adam Frederick, Richard Horan, Jeff Monsell			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		General Safety Procedures converted to EU Safety Procedure			





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Emergency #911 (unless specific local number for area)

System Operator # \_\_\_\_\_

Power Dispatchers # \_\_\_\_\_

Contact Center # \_\_\_\_\_

Local Safety & Industrial Health Contact # \_\_\_\_\_



# Electric Utilities TAILBOARD SHEETS

## Stop – Think – Act – Review

### **OSHA Regulation 1910.269(c) "Job briefing":**

The employer shall ensure that the employee in charge conducts a job briefing with the employees involved before they start each job. The briefing shall cover at least the following subjects:

- hazards associated with the job,
- work procedures involved,
- special precautions,
- energy source controls, and
- personal protective equipment requirements.



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**Safety Rule 1.7:**

The person in charge of a job shall facilitate a Tailboard Conference prior to starting work and when conditions change. The discussion shall include as a minimum:

- a) the overall steps of the job to be done and assignments.
- b) the hazards associated with the steps of the job.
- c) the methods to eliminate or control the hazards.



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# THINGS TO CONSIDER

### Attics/Crawl Spaces

- Heat
- Insects and animals
- Sharp edges/protruding nails
- Decking on ceiling trusses
- Mold
- Exposed electrical wires

### Competent Person(s)

- Person capable of identifying hazards and has authority to make corrections
- Pre-plans project for special equipment
- Inspects work site daily and during weather influences

### Confined Spaces

- Atmosphere tested prior to entry
- Rescue/retrieval systems available and employees trained in their use
- Maintain communication between entrants and attendant
- Purge space
- Guard rail around open cover
- Permit on site
- Declassify PRCs to NPCCS
- Continuous ventilation
- Traffic controls set up when confined space is located in or adjacent to confined space
- Refer to GSP 3 for more information

### Crew Member Qualifications

- Employees qualified to perform tasks
- Required certifications are in place prior to performing work
- Skill assessment conducted for crew members

### Electrical Power Crew Concerns

- Clearance requirements
- Test orders
- Condition of structure (i.e., pole, tower, etc.)

### Emergency Information

- Exact street address with town documented on tailboards
- Nearest medical facility
- Emergency Medical Services number – 911 or other authorized number
- Emergency phone numbers (internal/external)

### Energy Source Controls

- Identify potential stored energy (steam, power, hydraulic, kinetic)
- Lockout/tagout
- Clearance – Permit & Tag
- Bleed off stored energy
- Refer to Section 8 in the Safety Rule Book for more information

### Environmental Issues

- Spill kits are available at jobsite
- Inspect water (sight and smell) for sheen or odor prior to pumping and discharging
- Inspect soil (sight and smell) for discoloration or odor during excavation
- Stop work and contact supervision on environmental issues

### Equipment Inspection/Pre-Flight

- Pre-Trip inspections completed prior to moving
- Pre-Flight of aerial lifts prior to use
- Preventative maintenance up to date (i.e., oil change)

### Equipment/Traffic Control

- Workers and vehicles positioned defensively
- Flagmen placed as required
- Cones, Barriers, Barricades used as needed
- Traffic Warning Signs placed as required

### Excavations

- Unsafe excavations shall be protected prior to employee entry (shoring, benching, sloping)
- Use ladders in excavations more than 4 feet deep
- Ladders shall extend 3 feet out of excavation
- Spoils 2 feet from edge of excavation
- Refer to GSP 18 for more information

### Fall Protection

- Aerial lift requires full body harness with lifeline
- Protection for potential fall of 4 feet or more
- Inspect full body harness and lanyard prior to use
- Boom lift requires full body harness

### Fire/Explosion

- Fire extinguisher shall be charged and present at all jobsites
- Fire watch utilized during hot work
- Air monitoring conducted to ensure safe atmosphere prior to performing hot work

### Grounding/EPZ

- Test and ground
- Step/touch potential
- Minimum approach distances
- Safety watch

### Material Handling/Rigging

- Rigging inspected prior to use
- Determine weight of load
- Utilize properly sized/configured rigging
- Refer to GSP 20 for more information

### Minimum Approach Distances

- PPE gloves and sleeves
- Cover up
- Refer to PPL Safety Rule Book for more information

### Multi-Contractor Worksites

- Coordination with GC/CM
- Painting work nearby?
- Clearance – Permit & Tag
- Lockout/tagout
- Falling object hazards

### Obstructions/Branches

- Patrol the line to identify potential obstructions
- Eliminate obstructions when possible (i.e., trim branches)
- Identify overhead power hazards
- Minimum approach distances

### Overexertion/Repetitive Tasks

- Warm-up/stretch prior to beginning work and after extended break (lunch)
- Get help when lifting heavy/ awkward items
- Utilize mechanical devices whenever possible to move material/equipment (i.e., backhoe)

### PPE (FR Clothing, Gloves, Sleeves, Foot, Face/Eye)

- Standard PPE is hard hat, safety glasses, high visibility clothing; additional PPE utilized as necessary for job (i.e., cut-resistant gloves)
- Refer to GSP 29 and 51 for more information

### Poisonous Plants and Wildlife

- Identify and control poisonous plants in work area
- Use barrier creams and or PPE to minimize exposure
- Clean exposed areas with soap and water ASAP
- Check for ticks

### Power Exposures (Overhead, Step, Touch)

- Check for power lines (overhead/ underground) to avoid contact when utilizing equipment
- Maintain a 10-foot clearance from overhead power lines (additional 4 inches for each 10 kV over 50 kV)
- Ground vehicles and equipment where applicable

### Public Safety Precautions

- Proper housekeeping at the jobsite during construction
- Delineate work area with cones, caution tape, signs, etc.
- Protect construction areas with orange fence when leaving site

### Slips/Trips/Falls

- Work area free from holes/depressions
- Mud/ice not accumulated on walking surfaces (truck, trailer, etc.)
- Utilize three-point contact
- Good housekeeping/work site/vehicles
- Fall restraint systems needed
- Raised floors
- Hole covers

### Stored Energy/Line of Fire

- What could hit me?
- Coiled pipe with memory
- Cable under tension; staying out of the bite
- Material lifting/pulled
- Lifting directly over load

### Tool Inspections

- Utilize proper tools for the task at hand
- Portable electric tools should be used with GFCI
- Air hoses for pneumatic tools shall be secured to prevent accidental disconnect

### Utilities (Marked and Unmarked)

- Inspect proposed excavation area for unmarked utilities
- Review utility locations with crew during briefing
- Hand dig all utilities in conflict with work area

### Vehicle Ingress and Egress

- Vehicle access is free of materials/debris
- Grab rails and hand holds are available
- Anti-slip material in place on walking surfaces
- Three point contact (in and out)

### Walk Job – Identify Hazards

- New location – assess surroundings
- Changed conditions from previous workday
- Potential general liability claims
- Trench cave-in
- Crane overhead hazards
- Subcontractor scope of work
- Housekeeping

### Work Area Set-Up

- Advance warning signs in place and clearly visible
- Qualified flaggers are utilized
- Written TCP in place
- Adequate illumination for night work
- Contact with local agencies/townships
- Refer to GSP 1 for more information

### Work Procedures

- Verify crew is aware of proper procedure for task
- Utilize 3-way communication during critical tasks
- STAR: Stop-Think-Act-Review



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**HUMAN ERROR PRECURSORS**

Error Precursors are conditions, at the job site, that increase the risk of making mistakes.  
 Recognizing error precursors is key to identifying error-likely situations.

Use error prevention tools such as Self-Check/STAR, Questioning Attitude, STOP-Timeout,  
 Good Communication, and Coaching to mitigate the effect of error precursors.

**SHORT LIST – Always “WITH” it**

<b>Work Environment Nature</b>	<b>Individual Capabilities</b>	<b>Task Demands</b>	<b>Human</b>
Distractions/Interruptions	Unfamiliarity with Task	Time Pressure	Stress
Changes	Lack of Knowledge	High Workload	Habit
Patterns			
Confusing Displays/Controls	New Technique Used	Simultaneous Tasks	
	Assumptions		
Work Arounds	Poor Communication	Repetitive Actions	
	Complacency		
Hidden System Response	Inexperience	Unclear Goals	
	Overconfidence		
Unexpected Equipment Condition	Illness/Fatigue	Unclear Roles	Mind
Set (Intentions)			
Personality Conflicts	Macho Attitude	Unclear Responsibilities	Risk
Perception			
Poor Instrumentation	For Critical Tasks	Unclear Procedures	Mental
Short Cuts			



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## **S-T-A-R**

### **Stop – Think – Act – Review**

**STAR** Requires you to **STOP** and **THINK**. Make certain that what you are about to do is indeed what you want to do. Then after you **ACT**, **REVIEW** the outcome against your expected response. Does it match? If the answer is No, **STOP** and involve your supervisor immediately.

### **STOP**

The individual shall...

- **Pause** – before performing a task to enhance attention to detail
- **Attempt** – eliminate current or potential distractions

### **THINK**

The individual shall...

- **Understand** – task specifics of what needs to be done
- **Identify** – appropriate equipment needed to complete task
- **Question** – identify all information relevant to the job
- **Determine** – is task appropriate for the given conditions
- **Decide** – if things do not go “as planned,” what actions (immediate or delayed) shall be performed; i.e., contingency plans
- **Obtain** – answers to any remaining questions or concerns

### **ACT**

The individual shall...

- **Point/Touch** – touch equipment label/identifier without losing eye contact, unless touching would cause unintended actions to occur; if so point instead.
- **If** – interrupted or distracted, remove hand from equipment – re-start the STAR technique
- **Confirm** – you are at the correct equipment while touching or pointing
- **Perform** – intended actions without losing eye or hand contact

### **REVIEW**

The individual shall...

- **Verify** – the actual system response is as expected
- **If** – unexpected response has occurred, initiate contingency plans as previously determined

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**PPL JOB SITE TAILBOARD CONFERENCE DOCUMENTATION FORM: Electric Utilities**



Date:	Person In Charge of Job  Name:  Employee #:	Emergency (911) Location:  Grid #:
Permit #:	PA 1 Call:	Restrictive Reclose (White Tag):
Specific work to be performed:        		
<b>Crew Member/Visitor Name and Employee #</b>		
<b>HUMAN PERFORMANCE 4 KEY QUESTIONS:</b>		
1. What are the critical steps or phases of this job/task? 2. How can we make a mistake at this point? 3. What is the worst thing that could go wrong? 4. What barriers or defenses are needed?		
<b>Major Job Step Categories (examples of hazards include):</b>	<b>Potential Hazards</b>	<b>Hazard Barriers/Defenses</b>
<b>Human Error Prevention:</b> ▪ Distractions/Interruptions ▪ Inattention/Loss of Focus ▪ Assumptions/Complacency ▪ Simultaneous/Multiple Tasks ▪ Time Pressure/In a Hurry ▪ Changes/Emergent Conditions	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....
<b>Loading Vehicles and Driving to Job Site:</b> ▪ Weather conditions ▪ Other drivers on the road ▪ Pinch points, strains, cuts, etc. ▪ Vehicle backing ▪ Size/Type of Vehicle ▪ Unsecured Loads/Loose Materials	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....
<b>Equipment/Traffic Control Set-up:</b> ▪ Traffic patterns ▪ Vehicle placement ▪ Worker positions/travel paths	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....



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<b>Work Site Hazards:</b> <ul style="list-style-type: none"> <li>▪ Walking working surfaces</li> <li>▪ Overhead clearances</li> <li>▪ Atmosphere - dust/asbestos/lead</li> <li>▪ Noise hazards</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Rigging [slings, chains, hoists, etc]:</b> <ul style="list-style-type: none"> <li>▪ Load ratings being exceeded</li> <li>▪ Pinch Points/Line of Fire</li> <li>▪ Rigging equipment condition</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Major Job Step Categories (examples of hazards include):</b>	<b>Potential Hazards</b>	<b>Hazard Barriers/Defenses</b>
<b>Working On or Near Energized Equipment/Switching:</b> <ul style="list-style-type: none"> <li>▪ Flash hazards</li> <li>▪ Contact hazards</li> <li>▪ Induced voltages</li> <li>▪ Incorrect switch moves</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Work on De-energized Equipment/Lines:</b> <ul style="list-style-type: none"> <li>▪ Unexpected energization</li> <li>▪ Arc flash</li> <li>▪ Improper grounding</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Material Handling/Storage:</b> <ul style="list-style-type: none"> <li>▪ Line of fire: (in between, or under)</li> <li>▪ Strains, sprains, cuts</li> <li>▪ Dropped materials</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Use of Hand and Portable Power Tools:</b> <ul style="list-style-type: none"> <li>▪ Line of fire contact w/body part</li> <li>▪ Projectiles</li> <li>▪ Cuts, pinches, bruises, etc.</li> <li>▪ Tool failure (hoses, cords, etc.)</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Work in Confined Spaces [vaults, manholes, digging/trenching]:</b> <ul style="list-style-type: none"> <li>▪ Lack of oxygen</li> <li>▪ Explosive atmosphere</li> <li>▪ Entrapment/Engulfment</li> <li>▪ Unexpected energization</li> <li>▪ Contact w/underground facilities</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Using Chemicals/Products:</b> <ul style="list-style-type: none"> <li>▪ Static Electricity/Explosion</li> <li>▪ Environmental spill</li> <li>▪ Inhalation, absorption, ingestion</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>Other – Specify</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



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	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....	<input type="checkbox"/> ..... <input type="checkbox"/> ..... <input type="checkbox"/> .....
<b>Post Job Brief/Critique: (Add another sheet of paper if needed)</b> 1. Any Safety Lessons Learned? If yes, comment:  2. Any considerations for future work? If yes, comment:		
Supervisor Reviewer/Designee:  Date:	Comments:	





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**Table 2 – Minimum Approach Distance Distances**

Nominal System Voltage	Minimum Approach Distance (MAD)	When working on or near exposed energized lines or equipment
Phase -to-Phase Exposure only for less than 15kV		Qualified workers may encroach on these clearances using approved work methods and proper electrical PPE.
50V to 300V	Avoid Contact	
301V to 750V	1' - 2"	
751V to 15kV	2' - 3"	
34.5kV*	2' - 7"	Qualified workers may NOT encroach on these clearances. Must use hot-line tools or live-line bare hand work methods.
69kV*	3' - 4"	
115kV*	3' - 9"	
138kV*	4' - 4"	
230kV*	5' - 3"	
500kV*	14' - 2"	
*Phase-to-phase exposure is not represented here, as it is only applicable during live-line bare hand work.		

\* When the vehicle is grounded, workers within 15 feet of ground points (e.g., outriggers) must use insulating mats or wear **tested overshoes**, and wear **Class 2 rubber gloves** if they will contact the vehicle or suspended load. Ensure that unprotected parts of the body do not contact the vehicle or suspended load.

Nominal Voltage	Uninsulated Booms	Insulated and Tested Booms
<600 Volts	<b>Avoid contact</b> , or cover lines with protective rubber goods, or de-energize	<b>Avoid contact</b> , or cover lines with protective rubber goods
600V – 15kV	<b>Maintain 4 feet</b> , or cover lines with protective rubber goods and ground <b>vehicle*</b> , or de-energize	<b>Maintain 4 feet</b> or cover lines with protective rubber goods
>15 - 138kV	Maintain 5 feet, or de-energize	
>138 - 230kV	Maintain 7 feet, or de-energize	
>230 - 550kV	Maintain 13 feet, or de-energize	
>550kV	Maintain 16 feet, or de-energize	

**Table 3 – Minimum Working Clearances**



**SP 40  
 SAFETY PROCEDURE  
 OSHA COMPLAINT & INSPECTION  
 GUIDELINES**

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## **SP 40 SAFETY PROCEDURE OSHA COMPLAINT & INSPECTION GUIDELINES**


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### **1.0 PURPOSE/SCOPE**

- 1.1 The Occupational Safety and Health Act (OSHA) gives a Compliance Safety and Health Officer (CSHO) the right to contact PPL in two ways:
  - 1.1.1 **Not In-person Inquiry:** Written or phone complaint of an alleged hazard. OSHA gives employees the right to file a complaint and request an OSHA inspection of their workplace if they believe there is a serious hazard or their employer is not following OSHA standards.
  - 1.1.2 **In-Person Site Visit by CSHO:** Face-to-face visit is a sustaining objective for PPL EU to have productive and meaningful interactions with representatives of Regional and Local OSHA Offices.
- 1.2 This procedure establishes –
  - 1.2.1 Guidelines for PPL EU's response and interactions with Compliance Safety and Health Officer (CSHO), and
  - 1.2.2 Assistance to PPL Electric Utilities personnel to ensure these objectives is met.

### **2.0 RESPONSIBILITIES**

- 2.1 Employees
  - 2.1.1 Have the responsibility to follow the guidelines and instructions set forth in this Safety Procedure.
- 2.2 Operating Departments
  - 2.2.1 Work with the Office of General Counsel and the affected department in completing a timely response to OSHA's Compliance Safety and Health Officer (CSHO).
- 2.3 Safety Operations
  - 2.3.1 Work with the Office of General Counsel and the affected department in completing a timely response to OSHA's Compliance Safety and Health Officer (CSHO).

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### 3.0 APPLICABILITY

- 3.1 This procedure is to provide guidelines to follow when a Compliance Safety and Health Officer (CSHO) visits a PPL EU work site or when OSHA inquiries are made via telephone or written communication.

### 4.0 TERMS AND DEFINITIONS

- 4.1 **CSHO** – is the acronym for OSHA's Compliance Safety and Health Officer from the Penna. Regional OSHA office.
- 4.2 **Walk-down Inspection** – Identifies potential safety and /or health hazards in the workplace. The CSHO shall conduct the inspection in such a manner as to eliminate unnecessary personal exposure to hazards and to minimize unavoidable personal exposure to the extent possible.

### 5.0 MAIN BODY

#### 5.1 NOT IN-PERSON INQUIRY (IN WRITING OR BY PHONE):

- 5.1.1 Contact Safety Operations immediately and forwarded the written inquiry or the phone number of the Compliance Safety and Health Officer (CSHO).
- 5.1.2 Safety Operations will work with the Office of General Counsel, and other appropriate personnel, to coordinate the completion of a proper OSHA response. **Important Note:** At no time is a PPL EU employee to respond to these inquiries unless first notifying the next level of management or Safety Operations.
- 5.1.3 After Manager-Safety Operations and Office of General Counsel reviews and approves the final response letter/package, Safety Operations will fax (and mail a hard copy) to OSHA's Compliance Safety and Health Officer (CSHO) with the following information:
- OSHA Complaint letter.
  - PPL EU's response letter.
  - Sign and date a document sent by OSHA titled: "Certificate of Posting OSHA Notification of Alleged Hazards" indicating the effective date of the posting.

**Important Note:** If an employee allows their name to be revealed on the written OSHA complaint, Safety Operations must verify with



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OSHA to determine if they want the names redacted before posting the complaint.

- 5.1.4 Safety Operations will email Regional Administrative Supervisors requesting their assistance to ensure that OSHA's Attachment A (Certificate of Posting OSHA Notification of Alleged Hazards) is posted on all bulletin boards at each regional location.
- 5.1.5 Safety Operations is responsible for making a PDF copy of all information sent to OSHA and placing the information in a shared drive (contact a Records Management employee for assistance).

**5.2 IN-PERSON SITE VISIT BY CSHO:**

- 5.2.1 When an OSHA Compliance Safety and Health Officer (CSHO) arrive at your work location, it is recommended that you ask for identification.
- 5.2.2 Upon verification of identification, ask CSHO the purpose of the visit – is it an imminent danger situation, an employee complaint, programmed inspection, follow-up to an inspection, or record review.
- 5.2.3 Once the intention is known, it is recommended that the appropriate Manager and/or Supervisor be notified along with the local Safety Specialist to inform them of the visit and the purpose.
- 5.2.4 A Safety Operations representative (or someone selected by management) must be present during the time of the CSHO's visit.

**Field Visits**

- 5.2.5 Field visits will normally entail the CSHO introducing himself/herself and informing you of a possible immediate inspection and/or may begin with some inquiries about the job. It is recommended that you obtain the CSHO's name and office information.
- 5.2.6 In these situations, notification to the immediate supervisor should immediately follow the initial introduction. If possible, the local Safety Specialist should also be notified. If not possible at the time, notification to the Safety Specialist should be made as soon as practical. This notification should include the nature of the visit. Consultation with the supervisor and/or local Safety Specialist is strongly recommended.



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- 5.2.7 Respond to any inquiries according to your knowledge as a competent person. If you are not certain of an answer to a question, refer this to your supervisor.

Opening Conference

- 5.2.8 Cordially confirm identity of the CSHO. They will provide a badge and business card.
- 5.2.9 Discuss the purpose and scope of the visit. After the initial introduction and explanation of the purpose for the visit, an Opening Conference is normally the next activity conducted by the CSHO. These are normally conducted when the visit is to a fixed location (e.g., office buildings).
- 5.2.9.1 If this is a written complaint, ask to see the Complaint.
- 5.2.10 Do not proceed with the Opening Conference until you have discussed the visit with the appropriate manager/supervisor
- 5.2.11 Note the conditions of the work site upon arrival as well as any changes, which may occur during the Opening Conference
- 5.2.12 The CSHO will ask questions and may ask to see certain programs and records. Requests for photocopies should be in writing. Ensure that these types of requests are approved by the next level management. It is strongly recommended that the Safety Specialist be consulted as further assurance that the response contains the appropriate material/information.
- 5.2.13 If the CSHO requests an employee representative to participate in the inspection/inquiries, and it involves bargaining unit personnel, an employee designated by the union must be permitted to accompany the CSHO. Contact the responsible chief steward for the work area to identify the bargaining unit representative. Under no circumstances may the employer select the employee representative.
- 5.2.14 OSHA encourages employer and employees to meet together in the spirit of open communication. The CSHO shall conduct the Opening Conference with employer and employee representatives unless either party objects. If there is objection to a joint conference, the CSHO shall conduct separate conferences with employer and employee representatives.



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Walk-around Inspection

- 5.2.15 If the inspection is related to a serious injury/accident, do not disturb the scene (except for immediate safety hazard).
- 5.2.16 If this is at a PPL facility, the CSHO may request to see the posting of the OSHA poster and worksite injury/illness records. These are located on the establishment's main bulletin board.
- 5.2.17 The CSHO shall determine as soon as possible after the start of the inspection whether sampling (e.g., air sampling and surface sampling) is required by utilizing the information collected during the walk-around. If the CSHO intends to do sampling or monitoring, it is recommended that PPL request this be scheduled in a manner that allows PPL to do simultaneous sampling or monitoring alongside OSHA.
- 5.2.18 Take notes/document the activities of the inspection and discussion/interviews.
- 5.2.19 Take photographs and/or videos to match the CSHO's activities in this area. A copy of these photographs or videos will be maintained by PPL EU.
- 5.2.20 Maintain a free and open exchange of information between the CSHO and employees is essential to an effective inspection/inquiry. Interviews provide an opportunity for employees or other individuals to point out hazardous conditions and, in general, to provide assistance as to what violations of the Act may or may not exist, and what abatement action, if any, should be taken.

Closing Conference

- 5.2.21 At the conclusion of an inspection, the CSHO shall conduct a closing conference with the employer and the employee representatives, jointly or separately, as the circumstances dictate. The closing conference may be conducted on site or by telephone as deemed appropriate by the CSHO.
- 5.2.22 The CSHO shall describe the apparent violations found during the inspection and other pertinent issues as deemed necessary by the CSHO. Both the employer and the employee representatives shall be advised of their rights to participate in any subsequent conferences, meetings or discussions, and their context rights.





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Any unusual circumstances noted during the closing conference shall be documented in the case file.

- 5.2.23 Since the CSHO may not have all pertinent information at the time of the first closing conference, a second closing conference may be held by telephone or in person to inform the employer and the employee representatives whether the establishment is in compliance.

Telephone Inquires

- 5.2.24 At times, OSHA may attempt to obtain information via the telephone. Although it is not possible to see the actual identification of the individual, it is strongly recommended to obtain the name and office location of the CSHO.
- 5.2.25 It is strongly recommended that you obtain clear and precise information as to the nature of the request. At no time should information be provided to the CSHO via the telephone, unless approved by the next level of management and/or Manager-Safety Operations.
- 5.2.26 It is strongly recommended that you inform the CSHO that the request for information must be forwarded to PPL EU via a written format.
- 5.2.27 As an alternative, an employee can refer the CSHO call to the next level of management and/or Manager-Safety Operations.

**6.0 REFERENCES**

- 6.1 OSHA Field Inspection Reference Manual CPL 2.103 Section 6 Chapter II.
- 6.2 PPL EU Safety Rule Book

**7.0 REGULATORY REQUIREMENTS – N/A**

**8.0 TRAINING / SAFETY**

**9.0 COMPLIANCE AND EXCEPTIONS - N/A**

**10.0 ATTACHMENTS - N/A**





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## 11.0 RECORD RETENTION

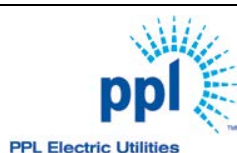
- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 11.0 RECORD OF REVISIONS

Rev	02	Date	07/26/2017	Effective	07/26/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Steve Mondschein, Brian Kostik, Dalton Shorts, and Elizabeth McKay.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Included a few changes from Tom Halma, OGC: Included OSHA Poster records at each facility. Changed terminology to In-person and Not In-person throughout the document.			

Rev	01	Date	01/06/2016	Effective	02/01/2016
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety			
<b>Reviewed by:</b>		Safety Professionals: Jeff Monsell, Jared Dyer, Steve Mondschein, Brian Kostik, Richard Horan			
<b>Approved by:</b>		Paul Ward, Director TD&I			
<b>Revision Comments:</b>		Clarify updated process for OSHA complaints in writing or by phones.			

Rev	00	Date	07/30/2012	Effective	07/30/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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### 1.0 PURPOSE/SCOPE

- 1.1 To establish best management practices for controlling exposure to asbestos containing materials and comply with OSHA, EPA, and state asbestos regulations for Asbestos Containing Materials (ACM).
- 1.2 This procedure applies to all company facilities and work sites involving company employee exposure (potential exposure) to asbestos.
- 1.3 This procedure is intended to provide general guidance and does not provide comprehensive specific direction on work methods, due to the length and complexity of those regulations. Consult regulations directly for specific guidance and/or consult with appropriately trained/licensed personnel.

### 2.0 RESPONSIBILITY

- 2.1 Site/Functional Manager
  - 2.1.1 Implement an asbestos compliance program based on the type of asbestos and work activities being performed.
  - 2.1.2 Complete the required written asbestos program (**Attachment A**) as appropriate, implement applicable aspects of the requirements, assure employees who engage in asbestos work are appropriately trained, and file the written program in a manner and location where it is available to employees and government inspectors.
- 2.2 Site Asbestos Coordinator
  - 2.2.1 Coordinate asbestos removal/re-insulation planning.
  - 2.2.2 Coordinate activities of "competent persons" from all work groups and insulation contractor.
  - 2.2.3 Prepare or assist in the preparation of asbestos demolition/renovation notification forms for submission to the proper regulatory office. Provide estimates of cubic yards of asbestos to be removed for submission to the appropriate landfill.
  - 2.2.4 Coordinate the program to survey Asbestos Containing Material (ACM) in accordance with EPA and OSHA guidelines.
  - 2.2.5 Ensure all asbestos jobs are under the direction of a certified asbestos supervisor.
  - 2.2.6 Assure asbestos-related documentation (identification samples, contractor records) are maintained indefinitely.



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- 2.2.7 Annually forward the previous year's contractor-related asbestos files to Corporate Record Center for enter into an electronic database and permanent storage of relevant hard copy documents.
- 2.2.8 Assure compliance with the Contractor Procedure.
- 2.3 Supervisor
  - 2.3.1 Assure employees are properly trained, and respirator/medical qualified to work on asbestos-containing materials.
  - 2.3.2 Contact the Site/Functional Manager, Site Asbestos Coordinator, PPL safety professional or other persons knowledgeable about asbestos when concerns are identified by employees.
- 2.4 Employee
  - 2.4.1 Appropriately trained and state licensed employees are responsible for following work methods and guidelines for which they have received appropriate training.
  - 2.4.2 Employees not trained in asbestos are not authorized to work with asbestos. Do not disturb asbestos-type materials. Treat thermal insulation, gaskets, packing, and other common asbestos-containing materials as asbestos unless or until analysis determines there is no asbestos present. Report breaks and tears in asbestos-containing insulation so that repairs can be made.
- 2.5 Safety Operations Representative
  - 2.5.1 Maintain and update this procedure.
  - 2.5.2 Ensure that during any abatement activity that air samples are collected on PPL employees performing the abatement, and area samples outside of contaminant where PPL employees are working.
- 2.6 Health Services
  - 2.6.1 Asbestos Medical program, administration and recordkeeping.
  - 2.6.2 Employee exposure record keeping.

### **3.0 APPLICABILITY**

- 3.1 This procedure establishes best management practices for controlling exposure to asbestos containing materials and complies with OSHA, EPA, and state asbestos regulations for asbestos-containing materials.



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### 4.0 TERMS AND DEFINITIONS

- 4.1 **ACM** - Asbestos Containing Materials means materials that contain more than 1% asbestos.
- 4.2 **ACBM** - Asbestos Containing Building Materials means building materials that contain 1% asbestos or more as defined under EPA's Model Accreditation Plan rule. It refers to ACM that's only part of a building structure.
- 4.3 **Adequately wetted** - Sufficiently mixed or coated with water or an aqueous surfactant solution to minimize release of airborne dust or particulates.
- 4.4 **Asbestos** - Asbestos is a naturally occurring mineral that appears in long, thin fibers. Airborne asbestos can cause cancer when inhaled. It is used in insulation and as a reinforcement material for a variety of products such as roof coatings. Asbestos may be found in boilers and pipe insulation, floor tiles, ceiling tiles, roof shingles, and coatings and cable wrap.
- 4.5 **Demolition** - the wrecking or taking out of any load-supporting structural member and any razing, removing or stripping of asbestos products.
- 4.6 **Disturbance** - Contact that releases fibers from ACM or PACM debris. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount which can be contained in one standard size glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.
- 4.7 **Encapsulation** - the application of a non-asbestos surface sealing agent to ACM to bind together the fibers and matrix to resist damage.
- 4.8 **Friable asbestos material** - any material containing more than 1% asbestos which may be crumbled, pulverized or reduced to powder by hand pressure or that has been reduced to powder by sawing, grinding or other mechanical means or by high temperature. This may also include previously non-friable material which becomes broken or damaged.
- 4.9 **Glove bags** - an impervious plastic bag-like enclosure affixed around an asbestos containing material, with glove-like appendages through which material and tools may be handled.
- 4.10 **HEPA** - High Efficiency Particulate Air filter means a filter capable of trapping and retaining at least 99.97% of 0.3 micrometer diameter mono-dispersed particles.



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- 4.11 **Homogeneous area** - an area of surfacing material or thermal system insulation that is uniform in color or texture.
- 4.12 **Miscellaneous ACM** - As defined by EPA, a variety of asbestos containing materials used in buildings such as: floor tiles - sheeting, felts and mastics; ceiling tiles and adhesives; interior transite type walls and panels, sealing tapes and joint compounds, exterior transite type walls, cooling tower panels and other transite materials, other asbestos cement building products - shingles, flat and corrugated sheets, electrical panels, Galbestos® siding, asbestos cement pipe - pressure, sewer and irrigation; roofing materials - flashing, felts, shingles and coatings; fire doors, paints, ovens, asbestos textiles, dry wall spackling, window caulks, lab hoods and soapstone tops, fabrics, fire blankets, gaskets, packing, brakes, clutches, pads and linings, other friction products.
- 4.13 **Non-friable material** - Under the Asbestos NESHAP, non-friable materials are divided into 2 categories:
  - 4.13.1 **Category 1 Non-friable ACM** - These are asbestos containing resilient floor coverings, commonly known as VAT (Vinyl Asbestos Tile), asphalt roofing products, packings and gaskets.
  - 4.13.2 **Category II Non-friable ACM** - All other.
- 4.14 **O&M** - Operation & Maintenance Programs - A term used by OSHA and EPA for a program designed to maintain covers or coatings of ACM or PACM in order to minimize the release of asbestos fibers.
- 4.15 **PACM** - Presumed Asbestos Containing Material. This is Thermal system insulation and surfacing material found in buildings constructed no later than 1980.
- 4.16 **Removal** - all operations where ACM and/or PACM are taken out or stripped from structures or substrates, and include demolition operations.
- 4.17 **Repair** - overhauling, rebuilding, reconstructing or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM.
- 4.18 **Surfacing Materials ACM** - sprayed-on, trowelled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, decorative or other purposes.
- 4.19 **Thermal System Insulation (TSI)** - Asbestos containing materials that serve to insulate and prevent heat loss or gain or water condensation on processes or equipment such as piping systems, valves, fittings, tees, elbows, flanges, tanks, vessels, air handling units and ducts, expansion joints, flues, etc.



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### 5.0 MAIN BODY

#### 5.1 ASBESTOS IDENTIFICATION

- 5.1.1 All asbestos samples shall be obtained by a certified inspector. A certified inspector is a person who has completed an Inspector's course as defined in EPA's Model Accreditation Plan.
- 5.1.2 Laboratories used to perform bulk sample analysis must be accredited by the National Voluntary Laboratory Accreditation Program (NVLAP), which is a proficiency program under the jurisdiction of the National Institute of Standards and Technology (NIST). For further information on selecting a NVLAP-approved lab to perform PLM analytical services, contact NVLAP at (301) 975-4016.
- 5.1.3 Each facility must have an asbestos survey that identifies the type of asbestos containing materials present, identify the type of asbestos, the location, the quantity, and the condition of the asbestos containing materials. This survey should include **marked up** P&IDs or blueprints to identify the location of asbestos containing materials. This survey should include both friable and non-friable asbestos containing materials
- 5.1.4 Asbestos containing materials in the facility must be identified by a labeling system that is consistent and has been communicated to all employees.
- 5.1.5 Asbestos containing materials should be inspected on a regular basis to assure that the materials have not been damaged and are labeled.
- 5.1.6 The asbestos survey must be updated to reflect any asbestos removal activities.
- 5.1.7 The asbestos survey should be used to identify any asbestos removal activities required prior to and during shut downs or other facility work activities.
- 5.1.8 The quantitative approach for managing all ACM/PACM involves conducting a comprehensive survey. This method should be used when there is insufficient data on the ingredients of certain materials. (TSI or surfacing materials installed prior to 1981, floor tiles, gaskets and clutches) This method involves collecting an appropriate number of bulk samples within defined homogeneous areas for identification purposes and archiving this information. Certified inspectors shall be used to collect samples.

#### 5.2 Asbestos Abatement Activities

##### 5.2.1 Notification of Asbestos Abatement Activities





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- a. Written notification must be made for planned removal activities that remove either 260 linear feet of pipe insulation or 160 sq. ft. of other asbestos materials following regulatory guidelines at your location. Typically timing is in writing 10 days before removal begins.
- b. Emergency removal of asbestos is designed to address removal activities that are unforeseen and need to be addressed immediately. This removal activity must be reported to the appropriate regulatory agency.

**5.2.2 Abatement Utilizing PPL Electric Utilities Employees**

- a. The organization must develop a program that complies with OSHA 1926.1101, EPA and state and local asbestos regulations. The program needs to address the following areas:
  - Proper equipment to remove and contain asbestos such as plastic sheeting, HEPA vacuum cleaners, glove bags, etc.
  - Proper training and certification for employees removing asbestos
  - Air monitoring to removal activities
  - Medical surveillance for asbestos
  - Respirator selection based on exposure data and a complete respirator program
  - Proper labeling and disposal
  - Proper signs and warning labels
  - Regulated areas

**5.2.3 Abatement Activities Utilizing an Outside Abatement Contractor**

- a. The organization must select a qualified contractor who is licensed to remove asbestos containing materials in their state. The contractor should be selected based on capabilities and his/her ability to comply with the asbestos abatement rules federal, State, Local Requirements and PPL Electric Utilities safety guidelines. Detailed information on abatement requirements can be obtained from EHS.

**5.3 OPERATIONS AND MAINTENANCE PROGRAM**

- 5.3.1 Each facility which is identified and having asbestos containing materials must implement an Operations and Maintenance (O&M) Program based on work activities with asbestos identified. Elements of an O&M Program can include but are not limited to the following:
  - a. Spill and waste clean-up procedures.
  - b. Personal Protective Equipment.





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- c. Asbestos abatement and control equipment necessary such as HEPA vacuums, glove bags, plastic sheeting, warning signs, etc.
  - d. Training necessary to perform expected activities.
  - e. Written procedures for handling, disturbing, and removing asbestos.
  - f. Location and type of asbestos.
  - g. Signs and other warning materials to establish a regulated area.
  - h. Medical Surveillance.
  - i. Procedures for removing and disposing of vinyl asbestos floor tile and glue, cutting or drilling through transite, etc.
- 5.3.2 Janitorial staff must be trained on asbestos containing materials that are in their work area. This information should be included in the facility O&M program.
- 5.4 TRAINING REQUIREMENTS
- 5.4.1 General employee training for asbestos should include the following information:
- a. Review of OSHA and EPA applicable standards and requirements for Asbestos.
  - b. Review of hazards of asbestos.
  - c. Review of asbestos signs and labels.
  - d. Review of types of asbestos present and location and how it is marked, labeled or identified in the facility.
  - e. Review of potential exposures based on work activities.
  - f. Review of actions to take if the employee suspects damaged, friable or airborne asbestos containing materials.
- 5.4.2 Employees who will be handling, disturbing, or removing asbestos need asbestos worker training.
- 5.4.3 Employee training needs to be documented and maintained in the employee's training file including any certificates required for employees performing asbestos abatement.



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**5.5 RECORDKEEPING**

**5.5.1 Records must be maintained for:**

- a. Objective data supporting a determination that installed asbestos is not capable of releasing fibers greater or equal to the PEL or excursion limit. This record shall be kept for the duration of PPL Electric Utilities reliance upon such objective data.
- b. Exposure measurements for at least 30 years.
- c. Medical surveillance records should be maintained for the duration of employment plus 30 years.
- d. Training records shall be kept for 1 year past last date of employment.
- e. Data to rebut PACM maintained as needed to rebut the presumption.

**5.5.2 Records and notifications shall be kept for the duration of ownership and then transferred to successive owners.**

**5.5.3 The following information must be retained by PPL Electric Utilities sites for these defined periods of time:**

- a. All air monitoring (data sheets, calibration, analytical reports) and bulk sampling (data sheets and analytical reports) records.
- b. All respirator training and fit testing records.
- c. Government notifications, waste transportation, treatment and disposal records.
- d. All Hazard Communication (HazCom) training records. Though contractors are responsible for keeping their own records, operating company sites should consider keeping copies of the following:
  - The contract.
  - Contractor insurance coverage.
  - Contractor licensing records.
  - Monitoring results.
  - All medical qualification and related records for employment plus 30 years after retirement or termination.



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### **6.0 REFERENCES**

- 6.1 PPL Safety Rule Book

### **7.0 REGULATORY REQUIREMENTS**

- 7.1 29 CFR OSHA Subpart Z (Toxic and Hazardous Substances), [1910.1001 \(Asbestos\)](#)
- 7.2 Environmental Protection Agency (EPA) Publication 560/5 5-85-024: [Guidance for Controlling Asbestos Containing Materials in Buildings](#)
- 7.3 Environmental Protection Agency (EPA) Publication 20T-2003 – [Managing Asbestos In Place A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials](#)
- 7.4 Environmental Protection Agency (EPA) 40CFR Part 61 – [NESHAP - National Emission Standards for Hazardous Air Pollutants Compliance Monitoring](#)
- 7.5 Environmental Protection Agency (EPA) Publication 340/1-90-019 – [Asbestos NESHAP Adequately Wet Guide](#)

### **8.0 TRAINING / SAFETY**

- 8.1 All employees must be appropriately trained and/or state licensed before working with asbestos. Personnel are responsible for following work methods and guidelines for which they have received appropriate training.

### **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

### **10.0 ATTACHMENTS**

- 10.1 Attachment A – PPL Asbestos Safety Program
- 10.2 Attachment B – Color Coding of Disposable White Coveralls
- 10.3 Form 4188 – Asbestos Job Log and Incident Report Link: [Form 4188](#)



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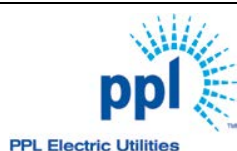
## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	05/01/2017	Effective	06/16/2017
<b>Prepared by:</b>		Colin J. Brigham, CSP, CIH – OneSource; Deborah Sweinhart, Safety Program Specialist			
<b>Reviewed by:</b>		Patrick Renshaw, Project Manager Environmental; Safety Professionals: Brian Kostik, Dalton Shorts, Jared Dyer, Elizabeth McKay, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Safety Operations Manager			
<b>Revision Comments:</b>		Reviewed by Certified Industrial Hygienist – changes made only include electronic database details			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**Attachment A - PPL ASBESTOS SAFETY PROGRAM**

**PPL ASBESTOS SAFETY PROGRAM**

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### **1.0 INTRODUCTION**

- 1.1 This PPL Asbestos Safety Program establishes minimum performance requirements for managing an appropriate asbestos control program at domestic US Company owned and operated facilities. Federal regulatory requirements have been addressed, including OSHA asbestos standards as well as EPA requirements. Footnotes are used throughout this manual to distinguish between OSHA, EPA and PPL requirements in order to clarify compliance issues. It does not address State or Local ordinances which in some cases may be more stringent. Sites are required to follow these in addition to those outlined in this program.
- 1.2 While less common today than in the past, asbestos can be found in many locations in a building including:
- Thermal insulation on furnaces, ducts, boilers and hot water pipes.
  - Asphalt and vinyl flooring
  - Suspended ceiling tiles in buildings constructed before 1980
  - Fire proof drywall, drapes, and curtains
  - Old roofing shingles
  - Exterior siding shingles
  - Sprayed-on fire proofing (beams and columns)
  - High temperature gaskets and valve packing
- 1.3 This Program must be reviewed and updated regularly and be available upon request to OSHA, affected employees, and their representatives.

### **2.0 APPLICABILITY OF THIS SITE PROGRAM**

- 2.1 This written program applies PPL Electric Utility locations:

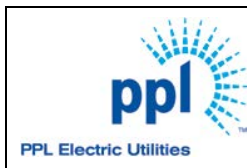
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- 2.2 This site asbestos plan has been developed by:

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2.3 Date of this written program review:

\_\_\_\_\_

2.4 For the above location(s), the following asbestos-related activities are conducted:

\_\_\_ No asbestos has been identified at this location, therefore no asbestos-related activities are undertaken.

\_\_\_ Limited asbestos-containing materials are on site. Operations and Maintenance procedures have been established to handle these needs.

LIST the types/ locations of asbestos-containing materials:

_____	_____
_____	_____
_____	_____
_____	_____

\_\_\_ Abatement of asbestos containing materials is conducted (when necessary) by an asbestos abatement contractor.

\_\_\_ Abatement of asbestos containing materials is conducted (when necessary) by PPL employees following OSHA regulations (29 CFR 26.1101) and the full requirements of this Asbestos Safety Program.

### 3.0 SITE GENERAL RESPONSIBILITIES

3.1 For this site/ program, the following person(s) (job titles) have responsibilities for the asbestos program:



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3.1.1 Site/ department functional Asbestos Coordinator:

\_\_\_\_\_

Telephone \_\_\_\_\_

3.1.2 Asbestos Abatement Contractor for abatement work at this site:

Company: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Industrial Hygiene Monitoring for asbestos abatement is normally conducted under the direction of the Asbestos Abatement Contractor.

Company: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

3.2 Contractors are advised of these asbestos procedures and of asbestos at this site that has been identified.

#### **4.0 TRAINING**

4.1 **Asbestos Awareness Training** (PPL MST 030) or equivalent, should be conducted annually for all personnel who may be exposed to asbestos. This includes employees in power plants who work around asbestos containing materials, facilities personnel who perform maintenance activities in mechanical rooms, and other jobs as broadly defined by OSHA as Class IV operations (1926.1101 (k)(9)(vi)).

4.2 **State Asbestos Licenses** – States require licenses and training to be conducted according to the tasks and responsibilities to be performed. Personnel must assure compliance with equivalent state and federal OSHA requirements.





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- 4.2.1 **Asbestos Licensed Supervisor - MST040** - Employees who supervise asbestos removal/installation work.
  - 4.2.2 **Asbestos Licensed Worker - MST050** - Employees who work with asbestos.
  - 4.2.3 **Asbestos Licensed Inspector - MST510** - Employees who evaluate asbestos related work or conditions.
  - 4.2.4 **Asbestos Licensed Management Planner - MST520** - Employees who plan work related to asbestos.
  - 4.2.5 **Asbestos Licensed Project Design - MST530** - Employees who design asbestos abatement projects.
- 4.3 **Job-Specific Tasks - Sections 20 - 40** of this program provide instructions for performing a variety of tasks common to this industry. **Follow local and state regulations as they apply.** Prior to doing these tasks, it is necessary to tailboard (document) the work to be done with a review of the job-specific procedure.

## 5.0 WORK PROCEDURES

- 5.1 Job Specific Work Procedures have been developed for specific tasks commonly performed by PPL employees and are included within this program in sections 20 – 40.
- 5.2 Deviations from these procedures should be reviewed with appropriately trained asbestos personnel.
- 5.3 Recommendations for new procedures and for changes to these procedures shall be sent to Safety Operations for review prior to implementation.

## 6.0 GENERAL WORK METHODS

- 6.1 These methods and work practices are “universal” per OSHA regulation and industry practice, and are to be used when working with asbestos containing materials. *See also job specific work methods, Sections 20 – 40.*
- 6.2 The employer must use vacuum cleaners equipped with HEPA filters, wet methods, and prompt clean-up when working with asbestos.



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- 6.3 Every employer must make sure that a "**competent person**" conducts an exposure assessment before the operation to determine expected exposures (29 CFR 1926.1101(f) (2); 29 CFR 1926.1101(f)(2)).
- 6.4 Respirators must be used when performing specific asbestos jobs and when entering regulated areas. Consult job specific directions and OSHA Regulations for proper respirator selection.
- 6.5 The employer must provide and require the use of **protective clothing** such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposure to asbestos that exceeds the time-weighted average and/or excursion limit (29 CFR 1926.1101(i); (29 CFR 1926.1101(i)).
- 6.6 The employer must institute a **medical surveillance** program for all employees who work with asbestos.
- 6.7 Only persons holding current state) **licenses** are permitted to do asbestos work. *See also section 4 –Training.*
- 6.8 **Regulated areas** are to be established wherever airborne concentrations of asbestos are in excess of the TWA or excursion limit. Regulated areas require/ involve:
- 6.8.1 Mark off from the rest of the workplace in a way that minimizes the number of persons who will be exposed.
- 6.8.2 Access to regulated areas must be limited to **authorized persons only**.
- 6.8.3 Respirator usage required.
- 6.8.4 Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated areas.
- 6.8.5 Competent Person required
- 6.8.6 Entrants must complete a **Regulated Area Entry Log** (*PPL Form 4171*).
- 6.9 **Monitoring** - For Class I and II asbestos abatement operations, the employer must also conduct daily monitoring, unless the employer has made a negative exposure assessment. (Abatement work (Class I) and IH Monitoring is customarily conducted by non-PPL consultants.) For Class III and IV operations (*Sections 20-40*), the employer must conduct periodic monitoring of all work where exposures are expected to exceed the PEL. Contact Safety Operations to arrange for monitoring.



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- 6.10 **Monitoring - Employee Notification** The employer must notify affected employees of the monitoring results that show each employee's exposure as soon as possible after the employer receives the results. The notification must be in writing, either sent to each individual or posted at a centrally located place that is accessible to affected employees.
- 6.11 **Vacuum cleaners** shall be equipped with **HEPA filters** to collect all debris and dust containing ACM or PACM; the equipment shall be used and emptied in a manner that minimizes the reentry of asbestos into the workplace.
- 6.12 **Wet methods**, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers show that the use of wet methods is infeasible, for example, due to the creation of electrical hazards, equipment malfunction, and, in roofing, slipping hazards; and
- 6.13 **Prompt clean-up** and disposal of asbestos contaminated waste, scrap, debris, bags, containers, equipment, and contaminated clothing consigned for disposal shall be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled, impermeable containers; except in roofing operations.
- 6.14 **Protective Clothing** is required for entry into regulated areas and for task-specific jobs. Typically it includes coveralls or other whole-body clothing, head coverings, gloves, and foot coverings.
- 6.15 **Contaminated Clothes (Non-disposable) Laundering:** The employer must also make sure that contaminated clothing is laundered so as to prevent the release of airborne asbestos in excess of the TWA or excursion limit. Contaminated clothing must be carried in sealed impermeable bags, or other closed, impermeable containers, and must be labeled.
- 6.16 **Hygiene Facilities and Practices** are required. Follow regulations for creating showers, change rooms, lockers, decontamination areas and procedures.
- 6.17 **Warning signs.** Warning signs marking the regulated areas must be provided at each affected location. Signs must be posted so that employees may read the signs and take necessary protective steps before entering the area.

6.17.1 The warning signs must contain the following information:

**DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY**



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6.17.2 In addition, where the use of respirators and protective clothing is required in the regulated area, the warning signs must include the following:

**RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA**

- 6.18 **Post warning signs at entrance to mechanical rooms/areas** where employees can reasonably be expected to enter and which contain ACM or PACM, the building owner must post signs that identify the material that is present, its location, and appropriate work practices which will ensure that the ACM or PACM will not be disturbed.
- 6.19 **Warning labels.** Warning labels must be put on all products containing asbestos fibers and their containers. The labels must comply with OSHA's Hazard Communication standard, including the use of material safety data sheets.

6.19.1 The labels must also include the following information:

**DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD  
IDENTITY of COMPANY CREATING WASTE**

- 6.20 When a building owner or employer identifies previously installed ACM or PACM, labels or signs must be affixed or posted so that employees will be notified of what materials contain PACM or ACM. The employer must attach labels in areas, such as the entrance to mechanical rooms or areas, where they will clearly be seen by employees who are likely to be exposed. Signs may be posted in lieu of labels so long as they contain the information required for labeling. *Follow/ observe Sections 12 and 17 as appropriate.*

**7.0 PROHIBITED WORK METHODS**

- 7.1 Use of **Compressed Air to remove or disturb asbestos**, high-speed abrasive disc saws, compressed air, dry sweeping, and employee rotation **as a means of reducing asbestos exposure** cannot be used for asbestos work.



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- 7.2 **Eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics** in regulated areas.
- 7.3 **Dry sweeping, shoveling, or other dry clean-up** of dust and debris containing asbestos.
- 7.4 **Employee rotation** as a means of reducing employee exposure to asbestos.
- 7.5 **Sand flooring material that contains asbestos.**

### **8.0 OSHA BUILDING/SITE GENERAL RESPONSIBILITIES**

*See also Section 17 - O&M PROCEDURES for detailed specifics of Asbestos O&M Program*

- 8.1 Employers and building owners are required to treat installed thermal system insulation and sprayed on and troweled-on surfacing materials as ACM.
- 8.2 Employers and building owners must determine the presence, location, and quantity of ACM or PACM at the work site. Employers and building and facility owners must exercise due diligence in informing employers and employees about the presence and location of ACM and presumed asbestos containing materials installed no later than 1980 also must be treated as asbestos-containing.
- 8.3 The employer or building owner may show that PACM and flooring material do not contain asbestos by showing that asbestos fibers have been modified by a bonding agent or other process so that no airborne concentrations of fibers in excess of the TWA or excursion limit will be released, or by showing that asbestos in a product is present in concentrations less than 1 percent.
- 8.4 Building and facility owners must keep records of all information concerning the presence, location, and quantity of ACM and PACM.
- 8.5 Building and facility owners must inform employers and employers must inform employees who perform housekeeping activities in areas that contain ACM or PACM of the presence and location of the ACM or PACM in areas where employees may work.
- 8.6 In addition, where the use of respirators and protective clothing is required in the regulated area under this section, the warning signs must include the following:
  - 8.6.1 At the entrance to mechanical rooms/areas where employees can reasonably be expected to enter and which contain ACM or PACM, the building owner must post signs that identify the



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material that is present, its location, and appropriate work practices which will ensure that the ACM or PACM will not be disturbed.

- 8.6.2 The employer must ensure, to the extent feasible, that employees who come in contact with the signs are able to comprehend them. Compliance may require the use of foreign languages, pictographs, graphics, and awareness training for employees.
- 8.7 Warning labels. When a building owner or employer identifies previously installed ACM or PACM, labels or signs must be posted so that employees will be notified of what materials contain the ACM or PACM. The employer must attach the labels where they will be clearly seen by employees who are likely to be exposed. Signs may be posted in lieu of labels, so long as they contain the information required for labeling.
- 8.8 The General Industry standard (29 CFR 1910.1001; 29 CFR 1910.1001) covers occupational exposure to asbestos in all industries except construction.
- 8.9 There is a separate standard (29 CFR 1926.1101; 29 CFR 1926.1101) for controlling occupational exposure to asbestos in the construction industry. Regulations include: demolition or salvage of structures where asbestos is present; removal or encapsulation of materials containing asbestos; construction, alteration, repair, maintenance, or renovation; installation of products containing asbestos; emergency spill/cleanup of asbestos; and transportation, disposal, storage or containment of asbestos-containing materials on the site or location at which construction activities are performed.

## 9.0 AIRBORNE LIMITS AND DEFINITIONS

- 9.1 **Airborne Limit** - The employer must ensure that no employee is exposed (1) to an airborne concentration of asbestos in excess of the permissible exposure level of **0.1 fiber per cubic centimeter of air as an eight hour time-weighted average** or (2) to the **excursion limit of 1.0 fiber per cubic centimeter of air averaged over a 30-minute sampling period**. (29 CFR 1926.1101(c)(1); (29 CFR 1926.1101(c)(1)).
- 9.2 **Asbestos** - includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.
- 9.3 **Asbestos-containing material (ACM)** - any material containing more than one percent asbestos.





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- 9.4 **Class I, asbestos abatement**, is defined as work that involves the removal of thermal system insulation (TSI) and sprayed-on or trowled-on ACM and PACM.
- 9.5 **Class II** asbestos work is removal of ACM or PACM that is not TSI or surfacing ACM or PACM. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- 9.6 **Class III** asbestos work is repair and maintenance operations that are likely to disturb ACM or PACM. *Sections 20 - 40 provide specific guidelines for a number of jobs that meet this type of work.*
- 9.7 **Class IV** operations are maintenance and custodial construction activities during which employees contact but do not disturb ACM or PACM, and activities to clean up dust and waste.
- 9.8 **Competent person** - one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for project designer or supervisor, or its equivalent and, for Class III and Class IV work, who is trained in an operations and maintenance (O&M) course developed by EPA [40 CFR 763.92 (a)(2)]. A competent person is not required to be medically cleared (for asbestos/respirator) or to be respirator certified if the tasks to be performed do not require it.
- 9.9 **Monitoring** - Exposure monitoring serves several purposes including: confirming compliance with the permissible exposure limit; providing a warning or indication as to whether control measures are working effectively; providing information necessary for proper selection of respirators; and providing data on exposure levels that may indicate risk of disease.
- 9.10 **Presumed Asbestos Containing Material - PACM** - - thermal system insulation and surfacing material found in buildings constructed no later than 1980.



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### **10.0 DISCHARGES OF ASBESTOS INTO WATER**

- 10.1 The cooling process is the primary way that asbestos fibers can become emerged in water at a power plant. Water can come into contact with asbestos fibers as cooling water travels through asbestos cement pipe or comes into contact with an ACM-lined cooling tower. (Since Section 307 of the Clean Water Act (33 USC 1307) designates asbestos as a toxic pollutant, 40 CFR 401.15, any discharge of asbestos-containing water is subject to federal regulation).
- 10.2 Asbestos-containing water discharges from steam electric power-generating stations are subject to special federal regulations. If a utility uses fossil or nuclear fuel in conjunction with a thermal cycle that employs a steam water system and the utility discharges water as a point source, then no detectable amount of asbestos may be discharged. (See 40 CFR 423.10, 423.13(d), 423.16(d), and 423.17(d). This cooling tower blow down discharge limitation is enforced as a condition of the utility's NPDES permit).
- 10.3 In 1991, EPA promulgated Primary Drinking Water Regulations establishing primary drinking water standards for asbestos. A maximum contaminant level was set at 7 million fibers per liter.
- 10.4 Asbestos in wastewater from renovation and demolition projects is also a concern. This problem is usually resolved through the use of local filters on wastewater drainage systems. The filters are then disposed of as ACM waste and the wastewater should be disposed into a sanitary sewer.

### **11.0 FORMS**

**NOTE: Access current forms from PPL's Intranet**

- 11.1 **Form 4171 - Regulated Area Entry Log –**  
All employees who enter a regulated area are required to complete this form. Supervisor's signature documents appropriate personal protection and work practices.

### **12.0 ASBESTOS IDENTIFICATION SYSTEM**

- 12.1 Plant/Facilities Management and/or PPL Contract Administrators are responsible for implementing and maintaining a tracking system to properly identify the asbestos content of the insulation throughout their location.
- 12.2 Plant/Facilities Management and/or PPL Contract Administrators, Cost Area heads and Supervisors are responsible for the implementation of this





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- instruction and for assuring that all employees under their charge understand and fulfill the obligations of this instruction.
- 12.3 For purposes of present-day health concerns, insulation can be classed into three primary types; asbestos, non-asbestos and presumed asbestos-containing materials. In order to provide a means of visual identification, the following guidelines will be implemented.
- 12.3.1 Asbestos-containing materials are identified with a red metal tag labeled "Asbestos".
- 12.3.2 Non-asbestos materials are identified with a green metal tag labeled "NON Asbestos."
- 12.4 **COLOR CODING** - The bright green will be affixed to insulation known to be asbestos free; bright red will be affixed to insulation known to contain asbestos and to insulation that is of unknown content.
- 12.5 **WHERE TAGS ARE TO BE PLACED** - Tags will be affixed to the outer covering of the insulation at the following locations:
- 12.5.1 Vertical Runs - Whenever a pipe or duct run enters or leaves a floor level or an enclosure, an applicable tag will be attached.
- 12.5.2 Horizontal Runs - Whenever a pipe or duct run enters or leaves an enclosure or a division wall, an applicable marking disk will be attached to the outer covering of the insulation.
- 12.5.3 Extended or Long-Distance Runs - An applicable colored marking disk should be attached to the outer covering of the insulated system at least every 100 feet.
- 12.5.4 Whenever the content of the insulation changes from asbestos to non-asbestos or vice versa, the identification system shall be used. Both disks should be placed side by side to mark the exact location of the change in content of the insulation.
- 12.6 Maintenance of the Marking System
- 12.6.1 Each applicable cost area will be responsible for the coordination of removal of all insulation and the remarking of the system. This should be coordinated through applicable plant and facilities personnel and the insulation contractor.
- 12.6.2 REMOVAL OF INSULATION WITH RED DISK MARKING - Insulation removal and replacement is normally performed by the



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contractor at the site. All contracts for the removal and/or replacement of insulation should include the requirements for installation of the asbestos identification system. Likewise, no red disks will be removed, nor the associated insulation with it, until a certified inspector has been notified of such an intent.

- Should PPL employees be required to do the insulation work, applicable personal protective equipment and work procedures will be required.

12.6.3 REMOVAL OF INSULATION WITH GREEN DISK MARKING - Work can proceed immediately for insulation identified with green disks.

12.6.4 REPLACEMENT OF ASBESTOS IDENTIFICATION DISKS - Re-marking of the new insulation with the proper disks shall be concurrent with the installation of the new insulation.

12.6.5 INSTALLATION OF COLORED DISKS - Can be accomplished through the insulation contractor at the site or through the local work request system. All contracts for insulation removal and replacement should include the requirements for installation of the asbestos identification system. Otherwise, the asbestos identification must be done by the local PPL work force.

### **12.7 Marking of Existing Insulation**

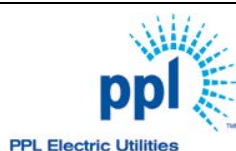
12.7.1 Insulation of unknown content must be considered to contain asbestos. Therefore, efforts should be made to identify the content of insulation throughout the plant so that the use of "asbestos" procedures can be minimized.

12.8 Mechanical rooms in the G/O, regional facilities and outside of the industrial power plants (i.e., office and administrative buildings) that employees reasonably can be expected to enter and which contain TSI or surfacing ACM/PACM shall be posted. The signs will identify the material which is present, its location and appropriate work procedures so the ACM/PACM will not be disturbed.

## **13.0 SHIPPING BULK SAMPLES OF ASBESTOS**

13.1 Bulk samples of asbestos containing material being shipped to a laboratory for analysis are exempt from DOT requirements if the following conditions are met.

13.1.1 Each sample is less than 1 ounce.



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- 13.1.2 Each sample is packed in cushioned, securely sealed inner containers of (at least 8 mil or 0.2 mm thickness) glass, metal or earthenware.
- 13.1.3 The total weight of the package is less than 64 lbs.
- 13.1.4 The package is specially marked, i.e., asbestos samples.
- 13.2 If this exemption does not apply, the material must be shipped in a properly labeled and marked package and with shipping papers that include the description of the hazardous materials.
- 13.3 Use the following table to determine what information must appear on the package and shipping paper.

**TEXT**

RQ\*

**COMMENTS**

Reportable Quantity” not required if the amount is less than 1 lb. of friable asbestos

WASTE\*

If applicable, not required for bulk samples.

ASBESTOS\*

MIXTURE\*

For ACM where the asbestos is in a mixture with a binder.

CLASS 9

Class 9 is the Miscellaneous Hazardous Materials designation that includes asbestos. Containers must display a Class 9 marking.

NA2212\*

The North American Identification Number.

PGIII

Packing group number required for domestic transportation only.

LTD QTY

Not applicable if total package weight exceeds 66 lbs.

55 LBS

Total quantity of ACM in the package.

\* - Signifies Text That Must Also Be Shown On the Packaging



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### 13.4 How to Ship Asbestos between PPL Facilities

13.4.1 Containers of friable asbestos are DOT regulated when shipped by highway. All individuals involved in packaging, transporting, completing the paperwork, and loading and unloading must receive DOT 126F training and undergo refresher training every two years.

### 13.5 Packaging

13.5.1 Local/State Waste regulations and the U.S. Department of Transportation regulate the shipment of friable asbestos containing materials. Friable asbestos containing waste shall be sealed in leak proof containers while **wet**. Wet means sufficiently mixed or penetrated with liquid to prevent the release of asbestos fibers. The containers shall meet one of the following:

- The containers shall be multiple plastic bags with a cumulative thickness of 12 mils or more. The bags are to be goose-necked and taped. The containers are not required to be sealed in steel or heavy-duty fiberboard drums.
- The containers shall be single or multiple plastic bags with a cumulative thickness of 6 mils or more and shall be sealed in steel or heavy-duty fiberboard drums. The bags are to be goose-necked and taped.
- If the waste quantity or physical form does not lend itself to the above storage methods, the containers shall comply with an alternate storage method approved by the appropriate State Agency that does not result in visible emissions.

13.5.2 Storage containers shall be labeled with an identification and warning label (40 CFR 61.140-61.156). Asbestos bags can be procured from Company Stores using catalog number 304738. Safety Operations is the approving authority for this item.

13.5.3 Each individual package (bags or drums) of friable asbestos must be marked:

- RQ, Waste Asbestos, NA2212
- Generator's name and location where waste was generated

13.5.4 Each individual container shall be labeled:



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- DOT Class 9 Label
- OSHA label (29 CFR 1926.1101 (J) (7))

**DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD**

13.6 Shipping Paper

13.6.1 For transfers between PPL facilities, the Hazardous Materials Shipping Paper, Form 4293.

13.7 To Ship Asbestos between PPL Facilities and Landfills

13.7.1 All asbestos-containing waste material shall be deposited as soon as is practical in a landfill approved by the Environmental Management Division. Approved facilities will be residual waste landfills permitted to accept asbestos waste and constructed with double-liners and leachate collection systems. Residual waste can be stored for a maximum of 180 days. Most landfills require a minimum of 24-hour's notice before waste asbestos can be delivered. Also many residual waste landfills require their own residual waste manifest to be completed and to accompany the waste shipment. The landfill should be contacted and the arrangements finalized before shipment occurs.

13.7.2 Under NESHAP, a waste shipment record must be maintained. Generally the residual waste manifest will meet this requirement. The information that must be maintained for each waste load includes the following:

- Name, address, and telephone number of the waste generator.
- Name and address of the local, state, or EPA regional office responsible for administering the asbestos NESHAP program.
- Quantity of waste in cubic meters (or cubic yards).
- Name and telephone number of the disposal site.
- Date transported.
- Name, address, and telephone number of the transporter(s).
- Certification that the contents meet all government regulations for transport by highways.

13.8 Copies of the residual waste manifests and weigh slips should be forwarded to PPL EU Environmental Compliance (Walbert Training Center) for



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inclusion in the archival file. The generator is responsible for entering the shipment in the Waste Tracking System.

13.9 A copy of the residual waste manifest must be maintained by the generator for 2 years.

13.10 Marking of Transportation Vehicles

13.10.1 All roll-offs, compactor and other containers carrying these individual packages or carrying bulk (where the asbestos is within the roll-off or container in individual packages of greater than 881 pounds or 119 gallons) must have Class 9 labels on two opposing sides near the closure of the container and the asbestos ID number [2212] in an orange rectangular or white square on point display on all four vertical sides.

13.10.2 A residual waste sign must appear on two sides of the vehicle.  
Loading and Unloading Transportation Vehicles

13.10.3 Vehicles used to transport waste asbestos must be marked during loading and unloading with warning signs. The signs must be 20" x 14" in size. Signs must say:

**DANGER  
ASBESTOS DUST HAZARD  
CANCER AND LUNG DISEASE HAZARD  
Authorized Personnel Only**

13.10.4 Letters are to be 1" high Sans Serif, Gothic, or Block. Spacing between any two lines must be equal to the height of the upper two lines.

13.11 Personnel off-loading the containers shall wear proper protective equipment which includes disposable head, body, and foot protection. Minimum respiratory protection includes the use of half-face; air-purifying, dual-cartridge respirators equipped with high efficiency filters.

13.12 Waste asbestos bags shall be placed on the ground, not thrown or tossed, at the disposal site. Any damaged bags shall be repacked in another bag.

13.13 Upon complete removal of all containerized asbestos waste, the cargo area should be decontaminated using HEPA vacuums and/or wet wiping methods to comply with the OSHA "no visible residue" and EPA "no visible emissions" criteria.



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**14.0 MEDICAL SURVEILLANCE**

14.1 Health Services will coordinate the medical surveillance program for all employers who are determined to be in this program in accordance with OSHA 29 CFR 1926.1101(m).

14.2 General

14.2.1 Health Services shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above the permissible exposure limit or excursion limit, and for employees who wear negative pressure respirators pursuant to the requirements of this section.

14.2.2 Examination by a physician.

- Health Services shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided at no cost to the employee and at a reasonable time and place.
- Persons other than such licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate academic or professional institution.

14.3 Medical examinations and consultations

14.3.1 Frequency. Health Services shall make available medical examinations and consultations to each employee in the medical surveillance program on the following schedules:

- Prior to assignment of the employee to an area where negative-pressure respirators are worn.
- When the employee is assigned to an area where exposure to asbestos may be at or above the permissible exposure for 30 or more days per year, a medical examination must be given within 10 working days following the thirtieth day of exposure.
- And at least annually thereafter.
- If the examining physician determines that any of the examinations should be provided more frequently than specified, Health Services shall provide such examinations to affected employees at the frequencies specified by the physician.





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- Exception: No medical examination is required of any employee if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

14.3.2 Content. Medical examinations shall include the following:

- A medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems.
- On initial examination, the standardized questionnaire contained in Part 1 of Appendix D of this document, and, on annual examination, the abbreviated standardized questionnaire contained in Part 2 of Appendix D of this document.
- A physical examination directed to the pulmonary and gastrointestinal systems, including a chest roentgenogram to be administered at the discretion of the physician, and pulmonary function tests of forced vital capacity (FVC) and forced expiratory volume at one second (FEV(1)). Interpretation and classification of chest roentgenograms shall be conducted in accordance with Appendix E of this document.
- Any other examinations or tests deemed necessary by the examining physician.

14.4 Information provided to the physician. Health Services shall provide the following information to the examining physician:

- 14.4.1 A copy of OSHA 1926.1101, Appendices D, E, G, and I to this document.
- 14.4.2 A description of the affected employee's duties as they relate to the employee's exposure.
- 14.4.3 The employee's representative exposure level or anticipated exposure level;
- 14.4.4 A description of any personal protective and respiratory equipment used or to be used.
- 14.4.5 Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.





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14.5 Physician's written opinion.

14.5.1 Health Services shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall include:

- The physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos.
- Any recommended limitations on the employee or on the use of personal protective equipment such as respirators.
- A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
- A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

14.5.2 Health Services shall instruct the physician not to reveal in the written opinion given to the Health Services specific findings or diagnoses unrelated to occupational exposure to asbestos.

14.5.3 Health Services shall provide a copy of the physician's written opinion to the affected employee within 30 days from its receipt.

**15.0 CERTIFICATION AND TRAINING REQUIREMENTS  
(Assure compliance with local and state requirements)**

**15.1 Competent Person**

15.1.1 General. On all construction work sites covered by this standard, the employer shall designate a competent person, having the qualifications and authorities for ensuring worker safety and health required by Subpart C, General Safety and Health Provisions for Construction (29 CFR 1926.20 through 1926.32).

15.1.2 Required inspections by the competent person. Section 1926.20(b)(2) which requires health and safety prevention programs to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.

15.1.3 Additional Inspections. In addition, the competent person shall make frequent and regular inspections of the job sites. For Class I jobs, on-site



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inspections shall be made at least once during each work shift, and at any time at employee request. For Class II and III jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.

15.1.4 On all work sites where employees are engaged in Class I or II asbestos work, the competent person designated in accordance with paragraph 8.1 of this document shall perform or supervise the following duties, as applicable:

- Set up the regulated area, enclosure, or other containment.
- Ensure (by on-site inspection) the integrity of the enclosure or containment.
- Set up procedures to control entry to and exit from the enclosure and/or area.
- Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required.
- Ensure that employees working within the enclosure and/or using glove bags wear protective clothing and respirators as required.
- Ensure thorough on-site supervision, that employees set up and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements.
- Ensure that employees use the hygiene facilities and observe the decontamination procedures.
- Ensure that engineering controls are functioning properly.
- Ensure that thorough on-site inspection engineering controls are functioning properly and employees are using proper work practices.
- Ensure that notification requirements of this document are met.



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### 15.1.5 Training for the Competent Person

- For Class I and II asbestos work, the competent person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this standard; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors, such as a course conducted by an EPA or state-approved training provider, certified by the EPA or a state, or any course equivalent in stringency, content and length.
- For Class III and IV asbestos work, the competent person shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this standard, and the identification of asbestos. Such training shall include successful completion of a course equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers [See 40 CFR 763.92(a)(2)], or its equivalent in stringency, content and length. Competent persons for Class III and IV work may also be trained pursuant to the requirements of paragraph 16.4.1 of this section.

## 15.2 Asbestos Project Designer

15.2.1 A person must be accredited as a project designer to design any of the following activities with respect to friable ACM in the company: (1) a maintenance activity that disturbs friable ACM, (2) a response action for a major fiber release episode. All persons seeking accreditation as a project designer shall complete at least a minimum 3-day training course. The project designer course shall include lectures, demonstrations, a field trip, course review and a written examination.

## 15.3 Project Monitor

15.3.1 EPA recommends that states adopt training and accreditation requirements for persons seeking to perform work as project monitors. Project monitors observe abatement activities performed by contractors and generally serve as a building owner's representative to ensure that abatement work is completed according to specification and in compliance with all relevant statutes and regulations. They may also perform the vital role of air monitoring for purposes of determining final



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clearance. EPA recommends that a state seeking to accredit individuals as project monitors consider adopting a minimum 5-day training course. The course consists of lectures and demonstrations, at least 6 hours of hands-on training, course review, and a written examination.

### 15.4 Certified Asbestos Coordinator/Inspector

#### 15.4.1 Definitions

- **Competent Person** - Regulated areas shall be controlled by a "competent person." This competent person must have received EPA asbestos abatement training or an equivalent course recognized by OSHA and the appropriate state certifying agency.
- **Asbestos Coordinator/Inspector** - In addition to being a "competent person," the site asbestos coordinator coordinates all asbestos activities at a specific work site. This instruction outlines those duties.
- **Asbestos Inspector** - All persons who inspect for ACM in the company or public and commercial buildings must be accredited. All persons seeking accreditation as an inspector shall complete at least a three-day training course. The course shall include lectures, demonstrations, four hours of hands-on training, individual respirator fit testing, course review, and a written examination.

#### 15.4.2 Responsibilities

- An Asbestos Coordinator must be appointed for each facility for the implementation of this instruction.
- A Certified Asbestos Supervisor is a "competent person" who is responsible for supervising the duties associated with specific asbestos tasks.

#### 15.4.3 Duties

- Participates in all levels of asbestos removal/re-insulation planning. Coordinates participation of all work groups.
- Monitors the insulation contractor's level of performance during outage and non-outage periods.
- Prepares weekly highlight lists of insulator contractor's activities.



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- In conjunction with the insulation contractor, establishes manning levels for all outages with regard to maintenance, TIP, and ER-related work.
- Prepares lists of work items to be addressed during overhauls/outages.
- Monitors costs during overhauls, outages, etc.
- Attends overhaul and outage meetings with insulation contractor's representative and representatives from other departments/work groups.
- Prepares work flow charts for major asbestos activities by company personnel.
- Reviews contractor work flow charts.
- Monitors asbestos removal projects with regard to safety.
- Coordinates activities of "competent persons" from all work groups and insulation contractor.
- Ensures the integrity of asbestos enclosures is checked on a regular basis.
- Prepares or assists in the preparation of asbestos demolition/renovation notification forms for submission to the state agencies.
- Provides the station with estimates of cubic yards of asbestos to be removed by months for submission to the appropriate landfill.
- Prepares ERs as required.
- Reviews and analyzes monthly charges in BIs 25 and 32 (Material and Work by Outsiders).
- Coordinates the request for asbestos removal costs with insulating contractor.
- Reviews and/or approves daily DTRs and weekly field payroll time sheets.



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- Reviews invoices for accuracy and recommends for payment.
- Ensures the prompt processing of RFOs and WOs. Should be the initial point of review of all RFOs regarding insulation.
- Creates a system to ensure the distribution of WOs to the vendor, the monitoring of their status and the timely completion of WOs.
- Meets with the contractor on a daily basis or more frequently as required serving as the primary contact with the insulation contractor.
- Monitors contractor's personnel levels for adherence to established schedules. Approves all reductions/additions in advance of implementation.
- Appraises the insulation contractor of activities which could impact on his activities. Ensures that the contractor is ready to respond to station insulation requirements.
- Evaluates the insulation contractor's performance for compliance with established contractor safety and performance guidelines.
- Acts as an interface with other work groups regarding insulation activities.
- Acts as interface with employees on all concerns about asbestos and/or insulation.
- Coordinates the activities of the monitor to include numbers and types of samples taken, turnaround time for results, informing all vendors and work groups and posting of results to bulletin boards.
- Apprises plant personnel and procurement of any changes required to contracts or contract specifications.
- Investigates asbestos rumors to determine concerns/problems and takes corrective action to alleviate concerns, remedy situations and/or implement countermeasures to ensure safe work environment.
- Coordinates the program to survey Asbestos Containing Material (ACM) in accordance with EPA and OSHA guidelines and develops plant map from cumulative surveys.



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- Arranges for cleaning/laundry of contaminated clothing and ensures personnel are properly informed of hazards and procedures.
- Ensures that insulation contractor is periodically audited in all phases of asbestos work.
- Ensures that all documentation for company personnel is up-to-date and accurate.
- Ensures that all asbestos jobs are under the direction of a certified asbestos supervisor.
- Ensures that insulation contractor provides pertinent documentation on all asbestos jobs.

### **15.5 Certified Asbestos Supervisor**

15.5.1 The certified asbestos supervisor is any individual who has completed the required asbestos abatement training program conducted by an EPA asbestos training center or an equivalent program and is certified as an "asbestos supervisor" recognized appropriate state agency.

#### **15.5.2 Responsibilities**

- The certified asbestos supervisor is responsible for ensuring that the key decisions associated with asbestos work are consistent with asbestos standards.
- This person shall be formally trained in all aspects of abatement and removal procedures and shall supervise employee monitoring and personnel protection and shall have a working knowledge of OSHA General Industry and Construction Standards, state and EPA Guidelines.

#### **15.5.3 Duties**

- Overseeing the safe and timely establishment of negative pressure enclosures.
- Ensuring the integrity of the enclosure.
- Controlling entry and exit from the enclosure.



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- Ensuring employee exposure monitoring when required by the standards.
- Ensuring that all employees working within the enclosures wear the appropriate personnel protective equipment.
- Ensuring employees who enter enclosures have proper certifications.
- Ensuring the use of hygiene facilities and decontamination procedures specified in the standard.
- Ensuring that engineering controls in use are in proper operating conditions and are functioning properly.
- Ensuring compliance with EPA, state, and OSHA guidelines.
- Overseeing contractor to ensure regulatory requirements are being followed.
- Conducting visual inspection of the enclosure prior to release by the contractor and assuring that exposure levels are within parameters.
- Coordinating all activities with the site asbestos coordinator.
- Compiling all documentation and forwarding to site coordinator.

**15.6 Certified Asbestos Worker**

- 15.6.1 A person must be accredited as a worker to carry out any of the following activities with respect to friable ACM within the company: (1) a maintenance activity that disturbs friable ACBM, or (2) a response action for a major fiber release episode.
- 15.6.2 All persons seeking accreditation as asbestos abatement workers shall complete at least a four-day training course. The four-day worker training course shall include lectures, demonstrations, at least 14 hours of hands-on training, individual respirator fit testing, course review, and an examination. Hands-on training must permit workers to have actual experience performing tasks associated with asbestos abatement.
- 15.6.3 A person who is otherwise accredited as a contractor/supervisor may perform in the role of a worker without possessing separate accreditation as a worker.





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### 16.0 NOTIFICATION TO LOCAL/STATE AGENCIES (Assure site meets local and state requirements)

- 16.1 Sites can decide to complete annual notification local/state agencies for “routine” asbestos removal at plant sites, and or prior to significant asbestos abatement jobs as specified by local and/or state regulations.
- 16.2 Notification must be made on the appropriate local/state forms.
  - 16.2.1 Follow Environmental procedure 0000-000-PR-7015 pre-Demolition Pre-Renovation Procedure located on the PPL EU Environmental SharePoint Site; link - [0000-000-PR-7015](#)
  - 16.2.2 Form can be accessed on the PADEP website or the PPL EU Environmental SharePoint site at:  
[Asbestos Abatement and Renovation Notification Form](#)
  - 16.2.3 At least 10 working days before a building is scheduled for demolition. This notification must be made even if no asbestos is present.
  - 16.2.4 At least 10 working days before any major renovation involving asbestos containing material (ACM). This includes all ACM projects involving greater than 160 square feet, 260 linear feet, or 35 cubic feet of asbestos.
  - 16.2.5 At least 10 days before the end of the calendar year, for anticipated activities that involve cumulative quantities of ACM greater than 160 square feet, 260 linear feet, or 35 cubic feet of asbestos.
  - 16.2.6 **Original, signed (faxes NOT accepted) notification (via certified mail) shall be made to the appropriate local / state agency address.**
- 16.3 Internal Copies of Notification Forms
  - 16.3.1 Keep your own file copy.
  - 16.3.2 Send a copy to PPL EU Environmental, WALO.
- 16.4 Sampling
  - 16.4.1 All bulk sampling associated with the notification must be performed by a certified asbestos inspector whose license number must appear on the notification.



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### **16.5 Responsibility**

16.5.1 PPL is responsible for asbestos work at its sites even if the work is done by a contractor. The contractor can prepare the notification, but a PPL employee shall forward it to the Agencies and make the internal distribution. Make sure the 10 working day advance notice is honored.

## **17.0 O&M PROCEDURES**

### **17.1 Asbestos Maintenance Program**

#### **17.1.1 Purpose**

- The principal objective of the maintenance program is to minimize exposure of employees to asbestos fibers. To accomplish this objective, the program includes work practices to (1) maintain ACM in good condition, (2) ensure proper cleanup of asbestos fibers previously released, (3) prevent further release of asbestos fibers, and (4) monitor the condition of ACM.

#### **17.1.2 Physical Assessment Method**

- The tendency for ACM to release fibers is directly related to the degree that the material has been disturbed or has deteriorated. Therefore, an important part of an inspection is the assessment of the physical condition of suspect ACM. Physical condition is one of the best measures of past and current disturbance and/or deterioration of the material. ACM in poor condition reflects past and perhaps ongoing disturbance/deterioration and probably indicates past and ongoing release of fibers into the air.
- The purpose of the assessment is to classify all ACM (including material that is assumed to be ACM) into one of the seven following assessment categories, with response actions; notice that each category is contingent on three issues:
  1. Material type (surfacing, thermal system insulation, miscellaneous).
  2. Current condition (good, damaged, significantly changed).
  3. Likelihood of deterioration (potential for damage/significant damage).



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- Damaged thermal system insulation or significantly changed thermal system insulation.
  1. At least repair the damage and re-inspect, or
  2. Remove the ACM if repair is not feasible.
- Damaged friable surfacing
  1. At least repair the damage and re-inspect (encapsulate, enclose or remove if less burdensome)
- Significantly damaged friable surfacing.
  1. Immediately isolate the area and remove ACM (enclose or encapsulate if those responses can guarantee against threat to human health and the environment).
- Significantly damage miscellaneous ACM or damaged miscellaneous ACM.
  1. Immediately isolate the area and remove ACM (enclose or encapsulate if those responses can guarantee against threat to human health and the environment).
  2. Or, at least repair the damage and re-inspect (encapsulate, enclose or remove if less burdensome).
- ACM (in good condition) with a potential for damage.
  1. Re-inspect (this category and the associated response action is also applicable to vinyl asbestos floor tile in good condition).
- ACM (in good condition) with a potential for significant damage.
  1. Institute preventive measure to eliminate potential for significant damage and re-inspect (remove ACM as soon as possible if preventive measures will be ineffective).



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- Any remaining friable ACM (in good condition).
  1. This category is implicitly limited to ACM that is in good condition and has no potential for any damage.

17.2 Assessing the current condition of suspect material is based on a visual inspection; suspect material is assigned to one of three categories: good, damaged, or significantly damaged. The following describes the criteria used to determine the condition of ACM. To assess the condition of the material, an inspector must evaluate the amount of localized or distributed damage. The attached Table 1 describes the criteria used to determine the condition of ACM.

17.3 Assessing the Potential for Disturbance

The likelihood that suspect material could be disturbed in the future is related to the potential for contact, influence of vibration, and potential for air erosion. Criteria for evaluating each of these factors are presented below.

17.3.1. Potential for Contact with the Material

High:

1. Employees work in the vicinity of the material more than once per week, or
2. The material is in a public area (e.g., hallway, corridor, meeting room) and accessible to everyone.

Moderate:

1. Employees work in the vicinity of the material once per month to once per week, or
2. The material is in a room or office and accessible to the occupants.

Low:

1. Employees work in the vicinity of the material less than once per month, or
2. The material is visible but not within reach of employees.

17.3.2. Influence of Vibration:

High:

1. Loud motors or engines present (e.g., some fan rooms), or
2. Intrusive noises or easily sensed vibrations.

Moderate:

1. Motors or engines present, but not obtrusive (e.g., ducts vibrating



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- but no fan intake area), or  
2. Occasional loud sounds.

Low/None:

1. None of the above.

17.3.3. Potential for Air Erosion

High:

1. Large volumes of high velocity air (e.g., elevator shaft, fan room).

Moderate:

1. Noticeable movement of air (e.g., airshaft, ventilator air stream).

Low/None:

1. None of the above

- 17.4 Objectively recording the conditions and Action Plan. Record the results of your inspection. As appropriate, develop action plans to deal with problem areas. Monitor, adjust and revise O & M procedures periodically (annually) to control asbestos potential hazards.



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**TABLE 1 CLASSIFYING THE CONDITION OF SUSPECT MATERIAL**

<b>MATERIAL CONDITION</b>	<b>FRIABLE SURFACING MATERIAL</b>	<b>THERMAL SYSTEM INSULATION</b>	<b>MISCELLANEOUS</b>
<b>Significantly Damaged</b>	The surface is crumbling or blistered over at least 10 percent of the surface if the damage is evenly distributed (25 percent for localized damage). Large areas of material hanging from the surface, delaminated, or showing adhesive failure. Water stains, gouges, or mars over at least 10 percent of the surface for evenly distributed damage (25 percent for localized damage). Accumulation of powder, dust, or debris similar in appearance to the suspect material on surfaces beneath the material can be used as confirmatory evidence.	Crushed or heavily gouged or punctured insulation on at least 10 percent of pipe lagging or tank jacketing if the damage is evenly distributed (25 percent if the damage is localized).  Mostly missing/removed wrapping from pipe lagging or tank jackets.  Accumulation of powder, dust, or debris similar in appearance to the suspect material on surfaces beneath the pipe/boiler/tank can be used as confirmatory evidence.	Material is beyond repair.
<b>Damaged</b>	The surface is crumbling, blistered, stained, gouged, or marred over less than 10 percent of the surface if the damage is evenly distributed (25 percent for localized damage).  Accumulation of powder, dust, or debris similar in appearance to the suspect material on surfaces beneath the material can be used as confirmatory evidence.	Crushed insulation or water stains, gouges, punctures or mars on less than 10 percent of pipe lagging or tank jacketing if the damage is evenly distributed (25 percent if the damage is localized). A few water stains or sections of missing wrap. Accumulation of powder, dust, or debris similar in appearance to the suspect material on surfaces beneath the pipe/boiler/tank can be used as confirmatory evidence.	Material in need of repair.
<b>Good Condition</b>	Material with no visible damage or deterioration, or showing very limited damage or deterioration.	Material with no visible damage or deterioration, or showing very limited damage or deterioration.	Material in good repair.



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**NOTE:**  
**SECTIONS 18.0 – 19.0**  
**RESERVED FOR FUTURE USE**



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## **20.0 Job Specific Work Procedure - HOUSEKEEPING**

### **20.1 Application**

- 20.1.1 This procedure applies to all plants and work environments where the presence of asbestos insulation in pipe, boiler wall, ductwork or other applications has created an environment where there is a high probability that debris on the floor or equipment may contain asbestos.
- 20.1.2 These procedures do not apply to the cleanup of fly ash, coal, mill scale, generator stators or motors, or other materials which are clearly known to be non-asbestos.

### **20.2 Scope**

- 20.2.1 These procedures are primarily directed to the power plants which still contain a lot of asbestos. As large sections of asbestos are removed, the need to follow these procedures will be reduced. Local plant or building management is responsible for determining the areas of the location that are covered by these procedures.
- 20.2.2 Current practice is that the asbestos removal contractor is called to remove large amounts of debris when it is suspected of being asbestos. This practice is appropriate for those cases where enclosures were not properly cleaned upon removal and for cases where asbestos insulation has fallen from broken lagging.
- 20.2.3 All cleaning should be done in a manner which reduces the potential of creating dust in the air while cleaning, when subsequent maintenance work is in progress or when cleaning up after the work is done.

### **20.3 Prerequisites**

- Asbestos Certification
- Medical Examination
- Respirator Fit Testing
- Respirator Training
- Asbestos General Awareness Training
- Review of this procedure prior to conducting maintenance documented on training roster or in PQS.





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**20.4 Personal Protective Equipment (when required)**

20.4.1 Tyvek suit, disposable coveralls without attached hood or boots, half-mask respirator with P-100 cartridges.

**20.5 Monitoring Required**

20.5.1 Contact Safety Operations to take air samples while performing cleaning operations if needed (i.e., if historical data is 12 months or older).

**20.6 Equipment**

**20.6.1 DO NOT USE:**

- Brushes
- Air Lances
- Brooms
- any other equipment that will create dust or airborne debris

**20.6.2 USE:**

- Asbestos vacuum with HEPA filters
- Wet or damp rags
- Detergent cleaning water
- Regular trash containers

**20.7 Work Procedures**

**NOTE: Initial plant work area cleanup prior to job start can eliminate asbestos incidents.**

20.7.1 **SMALL JOBS**, such as cleaning a pump, electrical box, or other similarly small area prior to performing repairs or maintenance.

- No special personal protective equipment is required. Spray cleaner onto area and wipe clean with cloth soaked in detergent water or appropriate cleaning solvent. Discard wipes into standard industrial waste.
- No special cleaning up of personal clothing should be necessary.

20.7.2 **LARGER CLEANUP AREAS**, such as cleaning the pipes and connecting beams associated with the removal of a burner box.



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- Wear half-mask respirator, gloves, and Tyvek suit. Use vacuum to clean loose debris from the tops of equipment in the general area of the work to be done. If it poses no safety hazard (electrical, heat, or chemical) the surfaces may also be cleaned with cleaning cloths and appropriate solvent and/or water.
- Personal cleanup shall include cleaning clothing and personal protective equipment with a HEPA vacuum and showering at the end of the workday.

20.7.3 **ALL CLEANING JOBS** - Do not use compressed air or pneumatic tools or equipment to clean debris in areas which contain asbestos.

- If compressed air is the only viable alternative for cleaning an enclosure must be constructed around the apparatus to contain all dust. Air monitoring is REQUIRED to assure the integrity of the system and method.

20.7.4 **Care of asbestos-containing flooring material** - All vinyl and asphalt flooring material shall be maintained in accordance with this paragraph unless the building/facility owner demonstrates that the flooring does not contain asbestos.

- Sanding of flooring material is prohibited.
- Stripping of finishes shall be conducted using low abrasion pads at speed lower than 300 rpm and wet methods.
- Burnishing or dry buffing may be performed only on flooring which has sufficient finish so that the pad cannot contact the flooring material.

## 21.0 Job Specific Work Procedure - VALVE PACKING/GASKET REMOVAL

### 21.1 Application

21.1.1 This procedure applies to all gasket and valve packing jobs which involve working on materials NOT KNOWN or PROVEN to be non-asbestos. Example: If you don't have specific data to substantiate non-asbestos, it must be treated as asbestos-containing material.

### 21.2 Scope

21.2.1 It is anticipated that high temperature/high pressure applications may require the continued use of asbestos-containing products. Valves and gaskets must be tagged to identify that asbestos is present or absent at



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the time of installation and can be worked on only by following prescribed procedures.

21.2.2 Basis For These Procedures - Air monitoring data has found that airborne fiber levels may exceed the OSHA limit of 0.1 f/cc for short periods of time when doing valve and gasket procedures without local exhaust ventilation and use of wet techniques. While employee eight-hour time weighted averages are not expected to exceed the OSHA limit, the following work procedures are recommended to maintain fiber exposures as low as possible.

### **21.3 Prerequisites**

- Asbestos Certification
- PA Asbestos Worker Certification
- Medical Examination (Employee Medical Screening Program)
- Respirator Fit Testing
- Respirator Training
- Asbestos General Training (Asbestos - Understanding Hazards)
- Review of this procedure prior to conducting maintenance.

### **21.4 Personal Protective Equipment Required**

21.4.1 Half-mask respirator with high efficiency cartridges.

21.4.2 Gloves, (work, latex, Tyvek, as appropriate for the job).

21.4.3 "Tyvek" disposable coveralls, regular style without boots and hood.

***NOTE:** See Appendix B for color coding of coveralls.*

### **21.5 Monitoring Required**

21.5.1 Contact Safety Operations to see if air samples are required while changing or removing packing or gaskets using the methods described herein.

### **21.6 Equipment List (see specific activity for its requirements)**

21.6.1 High Efficiency VACWM (HEPA filters)

- \* 21.6.2 Penetrating oil or equivalent solutions/solvents to soften gasket/valve packing prior to removal.

21.6.3 Asbestos labeled waste disposal bag



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21.6.4 Sheet plastic

21.6.5 Glove bags

21.6.6 Scrapers

- \* **NOTE:** Several products are available for aiding in the removal of asbestos gaskets and/or packing.

### 21.7 Work Procedures

21.7.1 These asbestos procedures are general in nature and must be integrated into the existing procedures to effectively control asbestos fiber which may be generated. Whenever possible, use the glove bag procedure for working with asbestos-containing materials contained in gasket or valve packing. When the glove bag procedure is impractical, the following procedures may be utilized.

#### 21.7.2 Preparations

- All work shall be under the direction of a certified asbestos person.
- Regulate ingress/egress by marking off the area with red barrier tape and install warning signs along the barrier.
- Complete the Asbestos Job Log/Incident Report (Form 4188).
- Close off air vents within the work area.
- Place builders plastic (6 mil) on the surface below the work area to catch any debris that may accidentally fall from the working area. Overlap at least two feet when using more than one section of plastic and seal the seam with duct tape.
- Set up amended water sprayer or penetrating oil can and HEPA vacuum. Put on respirator and protective clothing. HEPA vacuum all around the work area and wet wipe if necessary to remove residual materials.

#### 21.7.3 Gasket Removal

- Place plastic under work area to catch debris.
- Use penetrating fluid or amended water to wet the gasket as the bolts are loosened. When wetted as much as possible, break the seal.
- Prior to scraping the gasket seats, place the HEPA vacuum uptake as close to the gasket as possible.
- Use a HEPA vacuum to clean up debris.



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- Mist area with amended water spray and double bag all materials and protective clothes in labeled asbestos bags.

**NOTE: For SMALL gaskets, Use glove bag technique . . . SEE WORK PROCEDURE for GLOVE BAGS section 25 of this program.**

**21.7.4 Installing New Gasket**

- If the replacement is asbestos, wet it thoroughly before installation.
- Place either "asbestos" or "non-asbestos" identification tag on the flange or attach it to a flange bolt. Bolts may be modified to accept a wire through their head or a special washer may be fabricated to hold the asbestos identification disc.

**21.7.5 Valve Packing Removal**

- Use HEPA vacuum to vent off asbestos fibers.
- Place plastic sheet or bag a few inches below the valve. Metal hanger may aid supporting the plastic near the work zone.
- Place the nozzle of the vacuum as close as possible to the work zone so that any debris or dust created will be directed to the HEPA vacuum.
- Begin wetting the exposed parts as the valve is disassembled.
- Continue wetting the packing as it is removed.
- Use the HEPA vacuum to clean debris.
- When finished removing packing, use rags soaked in amended water or acceptable solvent to finish cleaning assembly.
- Discard rags with asbestos waste.
- Discard Tyvek suit with asbestos waste.
- Assure that final disposal of waste material is double-bagged, thoroughly wetted, and properly placed in asbestos holding area.

**21.7.6 Valve Repacking with Asbestos Packing (for example, Sulzer valves)**

**Preparation**

- Wear respirator, gloves, disposable protective clothing whenever asbestos-containing packing or gasket material is removed from its shipping container, unless it can be maintained in a wet state. If weighing or other task is done under a ventilation hood, only gloves need to be used.

**Installation**

- Wear respirator, gloves, Tyvek suit.



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- Place uptake nozzle of the vacuum next to the top of the valve.
- Pack and assemble valve.
- Use vacuum and amended water or solvent to clean packing tools.
- Discard asbestos waste appropriately in asbestos bags.
- Label valve as containing asbestos using the asbestos identification disc.

Cleanup

- Use the HEPA vacuum and/or amended water and a rag to clean up all tools used for gasket or packing work.
- Personal cleanup should include cleaning clothing and personal protection equipment with a HEPA vacuum. No special cleaning or laundering should be necessary.
- Discard all asbestos waste appropriately in asbestos bags. This includes all asbestos debris and protective clothing. Debris must be double-bagged and gooseneck sealed and removed to asbestos waste container.
- Remove red barrier tape and signs.
- Complete asbestos job log and any other required paperwork.

**22.0 Job Specific Work Procedure - MAINTENANCE PROCEDURES FOR  
REPLACING FILTER ON HEPA ASBESTOS VACUUMS**

**22.1 Application**

- 22.1.1 Removing/changing contaminated filters from asbestos vacuum with HEPA filters.

**22.2 Scope**

- 22.2.1 The asbestos (HEPA) vacuum is specifically designed to clean up fibrous asbestos and asbestos dust of all types. Special filters reduce the incidence of airborne dust that would be created by any other method of cleaning. The interior of the HEPA vacuum contains asbestos and must follow procedures for working with asbestos-containing materials.
- 22.2.2 This procedure covers the general safety and health precautions which must be followed when cleaning an asbestos HEPA vacuum. See manufacturer's instruction manual for specific details of the particular make and model being used.



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### **22.3 Prerequisites**

- PA Asbestos Worker Certification
- Medical Examination
- Respirator Fit Test
- Respirator Training
- Asbestos General Training - Understanding Asbestos Hazards
- Asbestos HEPA Vacuum Training Course, which covers HEPA vacuum cleaning **OR**
- Review of this procedure by a certified asbestos worker/supervisor.

### **22.4 Personal Protective Equipment Required**

22.4.1 Disposable gloves

22.4.2 Safety shoes

22.4.3 Eye protection

22.4.4 Tyvek coveralls - 1 pair

22.4.5 Respirator - full or half mask with P-100 filters

### **22.5 Monitoring Required**

22.5.1 Contact Safety Operations to take air samples while changing/cleaning HEPA vacuums.

### **22.6 Equipment Needed**

22.6.1 Small airless sprayer (water)

22.6.2 Wiping cloths

22.6.3 Red asbestos banner guard

### **22.7 Work Procedures**

22.7.1 There are up to five filters in an asbestos HEPA vacuum:

- HEPA filter media
- Impaction filter (also referred to as the prefilter)
- Cloth filter
- Filter bag protector (paper)



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- Tank filter bag (paper)

Most of the units include the installation of a plastic bag to contain all the filters and facilitate the removal of the paper filters.

*NOTE: "Wet" models may not have all the "paper" filters.*

22.7.2 HEPA and cloth filters should last at least three years if the vacuum is properly maintained. The HEPA media shall not be cleaned. The cloth filter should be vacuumed with another HEPA vacuum on each replacement of the tank disposable filters.

22.7.3 Impaction or pre-filter must be changed:

- After every other tank filter replacement, or,
- Any time there is a filter tear during operation of the unit.

*These tears would show up during the clean-out procedure and include the paper dust containment bag, the paper bag protector, and the cloth filter bag.*

22.7.4 Paper filter bags (protector bag and tank filter bag) must be "replaced":

- Daily, when vacuum is used but not to capacity of filter bag, or
- Must not be allowed to collect more than the capacity of the model being used.

For more information, refer to specific manufacturer instructions.

**22.7.5 Procedure for Removing Contaminated Filters and for Cleaning of Contaminated Tank**

- All work shall be under the direction of a certified asbestos supervisor.
- Complete the asbestos job log.
- Find an area protected from the wind and strong drafts and other people.
- Cover floor and work bench area with (1) one layer 6 mil plastic in order to make cleanup easier and to avoid contaminating the floor if a spill occurs.
- Put on proper protective clothing and respirator.
- Unplug machine from power source and move to cleaning area.
- Carefully and slowly remove the motor lid assembly (be sure you have not accidentally lifted the cloth filter bag at the same time). Set this assembly aside on the protective work bench. This





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assembly contains the motor, lid, the HEPA filter and the  
impaction filter.

**22.7.6 Changing the Impaction Pre-filter**

- The pink impaction pre-filter should be changed, using all of the precautions previously mentioned.
- To change the impaction filter, do the following before proceeding to the next step of the normal clean-out procedure.
  - 1) Wipe down all of the exposed surfaces on the underside of the removed lid using a wiping cloth dampened with water (not soaking wet).
  - 2) Carefully unclamp filter retainer from the side of the filter. Set the retainer aside.
  - 3) Remove the impact filter from the high efficiency filter. Be careful so as not to damage or puncture the HEPA media used in the final filter. Do not attempt to clean the pink impact filter in any way; dispose by placing it into the tank you are now in the process of cleaning. **DO NOT USE ANY TOOLS TO REMOVE THE IMPACT FILTER.**
  - 4) Before proceeding any further in cleaning the tank, first place a new impact filter (one only) onto the HEPA filter. Replace the impact retainer and lock it into place by reclamping.
  - 5) You may now proceed with next step.
- Continue with the normal clean-out procedure by gently tapping the inside of the cloth bag to loosen any particles that may be on the opposite surface. Do this all around the inside surface of the bag.
- Gently remove the cloth bag. Clean the outside of the bag with another HEPA vacuum using the standard crevice tool. Set the cloth filter aside.
- Carefully undo the elastic band from around the tank. Do not allow the elastic band to snap the bag closed. Push the entire bag "slowly" into the plastic bag inside the tank.
- Using a wiping cloth dampened with water (not soaking wet), wipe down all the exposed surfaces inside of the tank; put the cloth aside--do not discard.
- Carefully and "very" slowly, push the paper tank filter down and off of the intake tube, using the attached cardboard collar. After



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the collar is removed from the intake tube, take the damp cloth and wipe off any surfaces that were not previously wiped; at this time, rewipe the entire inside of the tank and drop the wiping cloth into the plastic bag inside the tank.

- Now reach in and gently pull up and around the paper bag the plastic bag that had been previously inserted. When you have the plastic bag fully extended, "gently" and "slowly" squeeze the bag closed as close to the filled bag as possible in order to avoid trapping excessive air.
- Gently remove the bag from the tank. Twist the unfilled portion closed and tie it into a knot or seal it with a tie wrap.
- **CAUTION:** Hazardous materials must be disposed of properly. Never throw contaminated debris in your usual trash receptacle. Place debris in a plastic bag or can marked "DANGER ASBESTOS" and take to an asbestos waste container double bagged and wet.
- For proper assembly of new filters, see "Tank Filter Set-up Procedure."

**22.7.7 Tank - Filter Replacement and Set-up Procedure**

- Fully open the plastic bag and place it down into the tank; place one side under the intake tube and pull the rest to the top of the tank and fit over the lip of the tank.
- Take the paper tank bag that has the cardboard collar attached and open it up by gently pulling the folds apart.
- You will notice two creases on the top side of the collar; carefully bend the ends down (toward the bag).
- Insert this bag into the tank and push it to the bottom, taking care not to snag the plastic bag.
- Locate the cardboard collar around the intake tube and gently work it up past the raised ring that runs around the tube.
- Push the plastic bag down past the paper bag; position it about 1/2 to 2/3 down past the top of the bag.
- Take the paper filter protector bag and insert it into the tank and snap the elastic band around the rim of the tank. (About two inches of the bag should be outside of the tank.)
- Place the cloth filter bag onto and into the tank, using the formed rubber gasket as a guide and press down firmly onto the tank rim.
- Place the formed wire basket into the cloth bag with wire ring towards the bottom of the tank.



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- Position the lid onto the tank, making sure that the gasket of the lid is seated onto the rubber ring of the cloth bag frame completely around the tank.
- Snap the lid latches into place.

**22.7.8 Additional Safety Precautions**

- Remove protective clothing and dispose of properly.
- Remove respirator and dispose of spent filters
- Employees must wash prior to eating, drinking and smoking.
- Personal cleanup shall include clothing and personal protective equipment with a HEPA vacuum and showering at the end of the workday.
- During the removal of asbestos dust, do not sweep, scoop, shovel, or in any manner handle other than by using a HEPA filtered vacuum.
- Do not at any time attempt to bypass or substitute the filters in the vacuum. Use only the proper approved filters and filter bags.
- Before attempting to use and before cleaning, be certain that you fully understand the instructions given for the use and cleaning/changing filters of unit.

**23.0 Job Specific Work Procedure - ASBESTOS CABLE WRAP REMOVAL**

**23.1 Application**

**23.1.1 When to Remove Asbestos**

Remove asbestos from cables under the following conditions:

- Scheduled work is to be done in the network which requires removal of asbestos to expose the cable or remove sections of cable.
- Upon inspection, the asbestos wrapping in a manhole/vault is disintegrating (particles actually falling off cable) or abraded (rubbed open on rack or chewed by rodents).
- Primary cables have been prone to failure in the past.



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**23.2 Scope**

23.2.1 This procedure is based upon OSHA Class II asbestos removal requirements; thus, the manhole/vault must be treated as asbestos-regulated area.

**23.3 Hygiene Practices**

23.3.1 Do not eat, drink, chew or smoke while removing asbestos, while in an asbestos removal area, or while wearing a respirator.

23.3.2 After removing protective equipment, wash face and hands before eating, drinking or smoking.

23.3.3 Before removing protective disposable coveralls, clean coveralls with a wet rag (or HEPA vacuum). Properly dispose of all protective equipment.

**23.4 Removal Conditions**

23.4.1 The most preferred removal condition is when the cable is completely blocked out and grounded so that rubber gloves and sleeves are not required. However, this may not always be practical. Some removal may be required under energized conditions. Follow all existing safety rules and procedures when determining what rubber protective equipment is required.

**23.5 Work Procedures**

23.5.1 Signs (Catalog Number 710733) must be posted at approaches to regulated areas;

**DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE CLOTHING  
ARE REQUIRED IN THIS AREA**

23.5.2 PPL Form 4171, Asbestos Job Log, must be used by personnel entering the area.

23.5.3 Asbestos removal workers in regulated areas must shower at the end of their shift. The removal steps for cable wrap are:



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- Don personal protective equipment which includes: hard hat, eye protection, respirator, disposable asbestos protective clothing. Don personal air sampling pump if deemed necessary by the asbestos supervisor.
- Enter manhole. Remove any asbestos debris on floor and equipment (wetting is required). Dry cleanup of asbestos (sweeping, shoveling) is prohibited. Place in plastic disposal bag. HEPA Vacuum.
- Bring all necessary tools and equipment into manhole.
- Apply detergent water (surfactant or penetrant) to asbestos before removing, cutting or disturbing asbestos. The material should be thoroughly soaked, but not dripping.
- Remove by cutting or unwrapping. Use HEPA vacuum with hose in close proximity to removal operation, if deemed necessary by the asbestos supervisor, during removal process to capture any possible fiber releases. Wet wipe (or vacuum) cables to clean off residue.
- Place removed asbestos and rag (if used) in plastic bag. Fill bag only half full in order to be able to handle the bag. Twist top of bag closed; seal in "goose-neck" fashion with duct tape. Wet wipe or vacuum outside of bag.
- Clean area of any asbestos debris.
- Wet wipe (or vacuum) tools, equipment, and personal protective equipment.
- Remove disposable asbestos protective clothing. Place in asbestos disposal bag.
- Place asbestos disposal bag(s) into second 6-mil poly bag. Seal in "goose-neck" fashion with duct tape. Double bagging may be done inside or outside work area.
- Remove tools, equipment, and material from manhole.
- Exit manhole.
- Wet wipe and clean face area around respirator.
- Remove respirator and dispose of filters in bag.



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**23.5.4 Removal Procedure for Cementitious Asbestos**

- Cementitious (old *concrete* fireproofing) is a friable asbestos material occasionally found in our manholes/vaults. It can be reduced to powder by hand pressure, and it is easily released into the air. In contrast, the fireproofing wrap is a *woven cloth*. It is not considered friable until it is cut into or disturbed in such a way that asbestos fibers are released into the air. These additional steps must be taken when dealing with the cementitious asbestos material:
- Place plastic, 6 mil covering on floor directly beneath the asbestos removal area.
- Saturate the fireproofing thoroughly with detergent water. Continue to wet during the removal process.
- Place an approved waste container (6 mil poly bag) directly under the section of insulation to be removed.
- Wrap a wet rag around the material and strike the rag with a hammer until a crack appears in the surface of the insulation. Using a chisel, pry bar, or other implement, begin to pry up small pieces of the material. Continually wet the material while working. Place each piece directly into the waste container as it comes free of the cable. Only use the rag and hammer when sections cannot be pried free.

**(NOTE:** Place HEPA vacuum hose in close proximity to removal operation to capture any possible fiber releases, if feasible.)

- A preferred method is to remove cable and asbestos as a unit and bag or wrap unit for disposal.

**23.5.6 Encapsulation**

- In any of the above procedures, if any asbestos material remains on the cable, encapsulates (spray or paint-on) should be used to "tack" the remaining material to the cable.

**23.5.7 Monitoring**

- See current safety and health guidelines on asbestos monitoring requirement.

**23.5.8 Bag Disposal**

- Place bags in asbestos waste container/drum.



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- Label all containers of asbestos including waste containers with the following (include point of generation on label):

**DANGER  
CONTAINS ASBESTOS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD**

- See General Safety Procedure's manual for disposal guidelines.
- Complete and carry shipping papers (PPL Form 4293 - Hazardous Material/Shipping Paper).

**24.0 Job Specific Work Procedure - AUTOMOTIVE BRAKE REPAIR**

**24.1 Applications**

24.1.1 Removal of disc and drum brakes.

**24.2 Scope**

24.2.1 Asbestos fibers have been used in brake materials for many years, and it is very nearly impossible to know which brakes may have asbestos. For this reason, all brakes removed are assumed to contain asbestos and unless otherwise labeled, all replacement materials are expected to contain asbestos. The central theme of these procedures is to reduce potential airborne fiber levels by keeping brake system parts wet during removal.

24.2.2 Basis for These Procedures: Previous monitoring was conducted that determined airborne fiber levels while doing brake jobs. Results of those surveys showed fiber levels below 0.1 fibers per cubic centimeter (f/cc), within the OSHA limit of 0.1 f/cc.

24.2.3 Disposal recommendations are based on requirements that include (only) asbestos-containing materials which are friable and have more than 1 percent asbestos. Samples of brake dust reveal only traces or no detected asbestos levels. Old brake lining which may contain asbestos has that asbestos bonded so that asbestos doesn't come off of it.

**24.3 Prerequisites**

**24.4 Personal Protective Equipment Required**

24.4.1 Standard work clothes, safety shoes, eye protection





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24.4.2 Respirator is not required

**24.5 Monitoring Required**

24.5.1 Sufficient monitoring has been done to establish these procedures for the job defined in this procedure. Contact Safety Operations if additional samples might be required due to a change in job conditions or environment.

**24.6 Equipment**

24.6.1 Handheld mist sprayer

24.6.2 Detergent water. This may be Sea wash in water, one ounce per 5 gallons. Other standard dilutions of detergent in water are acceptable

24.6.3 Tray, to capture washings

24.6.4 Soft bristled, two-inch paintbrush

24.6.5 Parts cleaner (optional)

24.6.6 Plastic trash bag

**24.5 Work Procedures**

**24.5.1 Brake Assembly Removal**

- Follow established operating procedures for removing wheels.
- When wheel is ready to be removed, take it off as gently as possible and lay it down, drum side up.
- Place tray or pan under brake assembly to capture washings. Spray detergent water into drum cavity and onto brake assembly to thoroughly wet and clean parts. Spray mist shall be as fine a mist as possible. A soft paint brush may be used to help clean the brake dust from the assembly.
- After thoroughly wetting with mist, drum can be wiped clean with paper towel or cloth dampened with detergent water.
- When excessive grease must be cleaned from brake assembly, apply parts cleaner with a catch basin to recapture solvent. Return solvent to parts cleaner reservoir.
- Subsequent removal of brake assembly parts must be done with the parts wet. Continue to spray parts as necessary. Clean springs and clamps as they are removed, either with detergent water or parts cleaner.





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### 24.5.2 Re-assembly:

- **Asbestos containing brakes may NOT be re-installed unless there are no non-asbestos replacement parts and a procedure is implemented to identify that the brakes contain asbestos.**

### 24.5.3 Cleanup

- Dispose of water washings into sanitary drain.
- Place brake pads, paper towels or cloth rags used for cleaning in standard plastic trash bag, close bag and place in dumpster.
- Place cleaned brake shoes into box for subsequent reuse.

## **25.0 Job Specific Work Procedure - GLOVE BAG/BOX METHOD OF REMOVING ASBESTOS**

### 25.1 **Application**

25.1.1 The use of glove bags provides an excellent means of controlling the release of airborne asbestos fibers on small sized asbestos removal jobs. Specific tasks which should be done with a glove bag include:

- Removal of a short section of pipe insulation.
- Removal of insulation around valve.
- Removal of insulation around elbow or tee in pipe runs.

### 25.2 **Scope**

25.2.1 These are general procedures for the use of glove bags for asbestos removal. They should be modified to fit the needs of your specific use or project. Safety Operations may be contacted to discuss alternate acceptable procedures.

25.2.2 Basis for These Procedures: The glove bag procedure is an industry-recognized technique employed throughout the asbestos control industry. It has been employed, refined, and its effectiveness has been proven both there and at PPL through airborne asbestos monitoring.

### 25.3 **Prerequisites**

- Asbestos Worker Certificate
- Medical Examination (Employee Medical Screening Program)



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- Respirator Fit Test
- Respirator Training
- Asbestos General Training (Asbestos-Understanding the Hazards)
- Asbestos Worker Training - Glove Bag Procedures **OR**
- Review of this procedure by a certified Asbestos Supervisor/Worker

### **25.4 Personal Protective Equipment Required**

25.4.1 Disposable "Tyvek" coveralls (hood and boots not required)

25.4.2 Approved respirator with HEPA cartridge

25.4.3 Safety shoes

25.4.4 Eye protection

25.4.5 Other equipment as required by the job

### **25.5 Monitoring Required**

25.5.1 Contact Safety Operations to take air samples while using the glove bag method of insulation removal.

### **25.6 Work Procedures**

#### **25.6.1 Starting the Job**

- Evaluate the job to determine how it is to be done. Will it fit into a glove bag? Can the glove bag be properly secured so that no fibers will escape? Ensure employees are trained to do the job. Assemble all tools to do the job. Use the Equipment Checklist.
- Regulate ingress/egress by marking off the area with barricade tape and install warning signs along the barricade.
- Complete the Asbestos Job Log (form 4188).
- Close off air vents within work area.
- Place 6 mil plastic on the surface below the glove bag to catch any debris that may accidentally fall from the working area. Overlap and tape with at least two feet of each sheet of builder's plastic overlapping the next, making sure it covers a sufficient area.
- Set up the water sprayer and HEPA vacuum. Put on respirator and protective clothing. HEPA vacuum all around the work area and wet wipe if necessary to remove residual materials.



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**25.6.2 Specifications and Work Practices Glove Bags and Boxes**

**Specifications**

- Glove bags shall be made of 6-mil thick plastic and shall be seamless at the bottom.
- (Reserved)

**Work Practices**

- Each glove bag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
- Glove bags shall be smoke-tested for leaks and any leaks sealed prior to use.
- Glove bags may be used only once and may not be moved.
- Glove bags shall not be used on surfaces whose temperature exceeds 150.
- Prior to disposal, glove bags shall be collapsed by removing air within them using a HEPA vacuum.
- Before beginning the operation, loose and friable material adjacent to the glove bag/box operation shall be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact.
- Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM wastewater without losing its integrity.
- Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected.
- At least two persons shall perform Class 1 glove bag removals.

**25.6.3 Negative Pressure Glove Bag Systems**

Negative pressure glove bag systems shall be used to remove ACM or PACM from piping.

**Specifications**

- In addition to specifications for glove bag systems above, negative pressure glove bag systems shall attach HEPA vacuum systems or other devices to bag to prevent collapse during removal.



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- Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal.
- A negative pressure generator shall be used to create negative pressure in system.
- An air filtration unit shall be attached to the box.
- The box shall be fitted with gloved apertures.
- An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water.
- A back-up generator shall be present on site.
- Waste bags shall consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mils

Work Practices

- The employer shall comply with the work practices glove bag systems.
- The HEPA vacuum cleaner or other device used to prevent collapse of bag during removal shall run continually during the operation.
- Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.
- At least two persons shall perform the removal.
- The box shall be smoke tested prior to each use.
- Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 6 mil plastic prior to the job or otherwise made intact prior to the job.

25.6.4 Glove Bag Removal

- Wash down the inside of the bag and clean off any equipment with the water wand. Place reusable tools into the glove/sleeve and pull the tools out. As the glove is inverted, twist the end above the tools, wrap the twisted area with several layers of tape and cut through the center of the tape. This tool package can be placed into the next new glove bag if another job is to be done immediately. Otherwise the tools can then be completely decontaminated by placing the sealed gloves into a bucket of water, cutting the gloves open under water, and washing the tools.
- Remove the water wand from the side port, insert the vacuum hose, and seal with duct tape. Turn on the HEPA-VAC to remove air from the bag. With the air being removed, squeeze the bag tightly (as close to the top as possible but below the vacuum hose)



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and twist, seal and tape closed to keep the asbestos material safely at the bottom of the bag. Turn off the HEPA-VAC and remove the hose from the side port, taking care to seal the side port with staples and tape.

**25.6.5 Cleanup**

- Cut and remove the glove bag from the working area and place it into a labeled disposal bag. Seal the bag and dispose of it properly. HEPA-VAC the work area for any residual materials. Encapsulate the ends of exposed insulation. Fold the plastic sheeting inward and place into a labeled disposal bag.
- Personal cleanup shall include cleaning clothing and personal protection equipment with a HEPA vacuum.
- Keep the respirator on until the disposable protective clothing has been removed and placed in a labeled disposal bag. Then wet wipe the outside of the respirator face piece before removing it.
- Thoroughly inspect the removal area to ensure that all visible debris has been removed before the area is cleared.
- Unusual conditions and events such as tears and breakthroughs of the glove bag require modification of the cleanup process. If personal clothing becomes contaminated with asbestos-containing materials, extra effort should be made and all the gear should be cleaned: disposable equipment is to be disposed of; hard hat, shoes, etc., are to be wet wiped; and personal gear is to be laundered following the "Laundering/Washing Procedure."

**26.0 Job Specific Work Procedure - ENTERING ENCLOSED AREAS CONTAINING ASBESTOS**

**26.1 Application**

- 26.1.1 This procedure applies to all work environments such as the penthouse or dead air space on boilers where the normal environment is fly ash which MAY be contaminated with asbestos.

**26.2 Scope**

- 26.2.1 This procedure is primarily directed to the power plants where entry into the penthouse or dead air space presents an environment with several possible hazards such as fly ash and asbestos. Since most of these areas are insulated, there is some concern about asbestos contamination. A certified "Asbestos Supervisor" should evaluate the area and make a determination as to the likelihood of asbestos contamination.



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26.2.2 Basis for the Procedures: A number of samples have been analyzed and found to contain various amounts of asbestos. The general appearance of the area can usually be used to predict the level of airborne asbestos expected. The various procedures herein are based on those results.

### **26.3 Prerequisites**

If asbestos is encountered, workers must be certified for asbestos work which includes:

- Asbestos Worker Certification
- Medical Examination (Employee Medical Screening Program)
- Respirator Fit Testing
- Respirator Training
- Asbestos General Training - "Asbestos - Understanding the Hazards"
- Asbestos Worker Training - Entering Enclosed Areas **OR**
- Review of this procedure by a certified asbestos supervisor/worker.

### **26.4 Personal Protective Equipment**

26.4.1 Proper respirator for asbestos or fly ash

26.4.2 "Tyvek" disposable coveralls

26.4.3 Work gloves.

### **26.5 Monitoring Required**

26.5.1 Contact Safety Operations to take samples to determine exact nature of contaminants. Air sample should be taken prior to entry.

### **26.6 Equipment List**

26.6.1 Asbestos high efficiency vacuum

26.6.2 Asbestos disposal bag

### **26.7 Work Procedures**

26.7.1 A certified "Asbestos Supervisor" should analyze the area and determine which of the following procedures to follow.



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### 26.7.2 Fly Ash Cleaning - No Asbestos Involved.

- Use respirators with high efficiency filters. Wear gloves and "Tyvek" suits.

### 26.7.3 Fly Ash with a Small Amount (Few Chunks) of Hard Insulation which is Suspected of Containing Asbestos.

- Complete asbestos job log. Enter area wearing high efficiency respirator, gloves, Tyvek suit. Place chunks into asbestos bag. DO NOT REMOVE ADDITIONAL INSULATION FROM WALL (this may constitute ASBESTOS REMOVAL). Then, follow procedures for fly ash cleaning.

### 26.7.4 Fly Ash with Significant Insulation Deterioration or Insulation Blowout from a Tube Failure which May Throw Insulation about Within the Enclosed Space.

- Treat as asbestos removal project unless bulk sampling proves no asbestos is present.

## **27.0 Job Specific Work Procedure - BOILER CASING REMOVAL**

### **27.1 Application**

- 27.1.1 This instruction is intended to minimize the potential for exposure of personnel to airborne asbestos during boiler casing removal by PPL personnel if the insulation behind boiler casing is unknown or ACM.

### **27.2 Scope**

- 27.2.1 PPL has certified asbestos supervisors at each plant to supervise operations within a regulated area (enclosure). This allows PPL to use its own employees to remove asbestos contaminated boiler casing within an enclosure. To be qualified for this work, the PPL employee must be respirator trained and fit tested, asbestos trained and must have the proper medical documentation.
- 27.2.2 Background for These Procedures: Air monitoring has found that airborne fiber levels do not normally exceed the OSHA limit of 0.1 f/cc when removing boiler casing. An insulation contractor is usually engaged to handle the removal of asbestos, but preboiler casing is normally done by PPL personnel. These procedures





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provide the guidance to ensure that PPL employees are protected from the potential hazards when doing this work.

### **27.3 Prerequisites**

- Certified Asbestos Worker
- Medical Examination (Medical Screening Program)
- Respirator Fit Test
- Respirator Training
- Asbestos General Training - Understanding Asbestos Hazards
- Asbestos Boiler Casing Removal Training Course **OR**
- Review of these procedures by a certified asbestos supervisor/worker.

### **27.4 Personal Protective Equipment**

- 27.4.1 Respirator -Full face or half mask with high efficiency particulate (P-100) filters.
- 27.4.2 Disposable "asbestos" Tyvek coverall with zipper front, attached hood, attached boots, elastic at waist and ankles.
- 27.4.3 Cloth coverall or rain suit may be used in addition to Tyvek coverall where work activities may quickly tear disposable coveralls. *See Entry/Exit Procedures for dressing sequence. Arrange for proper cleaning of these items prior to use at non-asbestos work areas.*
- 27.4.4 Shoe covering boots (medium duty equivalent to "Tingley" or "Totes" type) or standard boots. Reuse on a day-to-day basis. Store in equipment room.
- 27.4.5 Gloves - choice based on type of work to be done. Discard or properly launder when finished.
- 27.4.6 Other personal protective equipment as required by the job.

### **27.5 Monitoring Required**

- 27.5.1 Representative full-shift personal breathing zone monitoring must be conducted to assess airborne fiber levels. Contact Safety Operations to arrange for monitoring on this type of work; a "monitoring" contractor is usually available to do this monitoring.





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### **27.6 Equipment Required**

#### **27.6.1 Work Area Equipment**

- HEPA vacuum.
- Tools and rigging equipment.
- Spray container of amended water.
- Asbestos trash bags.

27.6.2 Tools needed to remove and replace casing.

27.6.3 Delmonox with hoses through clean room to work area where they can be attached upon from tool room.

27.6.4 Sign-in log.

27.6.5 Disposable protective clothing.

27.6.6 Gloves.

27.6.7 Duct tape.

27.6.8 Proper respirators for each employee.

27.6.9 Red banner guard tape - "asbestos."

#### **27.6.10 Decontamination Unit Equipment**

##### **Equipment Room:**

- HEPA vacuum.
- Bags for coveralls and rags.
- Rags and amended water for cleanup self and tools.
- Small bottle.

##### **Clean Room:**

- HEPA vacuum.
- Bags for dirty respirators.
- Hand cleaner and rags.
- Bags for trash.
- Sign-out log.



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**27.7 Work Procedures**

- 27.7.1 All work shall be under the direction of certified asbestos supervisor.
- 27.7.2 To support a boiler tube repair, an enclosure will be fabricated per required specifications during the casing removal phase of the job. The enclosure should be posted. Before use, the area shall be inspected by the "Competent Person" of the work group responsible for the work, and background airborne fiber surveys will be made using the contracted hygienist.
- 27.7.3 All casing will be washed prior to removal from the enclosure to ensure the removal of asbestos fibers. It is encouraged to remove sections of casing at the bolted joints. If it is necessary to use a burning outfit to remove the casing, employees will use fire retardant cloth suits and air lined supplied respirators. The fire retardant cloth suits are to be bagged to be laundered as per Section *Laundering/Washing Contaminated Clothing/Respirators*.
- 27.7.4 Air monitoring will continue during the job outside the enclosure to monitor for leakage and inside to check airborne fiber levels within the protection factor of the protective equipment.
- 27.7.5 Preparations
- All skin casing to be removed will be removed at bolted joint and so placed in the containment so as not to interfere with insulation removal and replacement and tube replacement. All casing will be washed prior to removal from the enclosure to ensure the removal of asbestos fibers.
  - During the pre-job inspection, a job foreman will determine where to place skin casing and rigging points needed to remove skin casing safely. Any welding and cutting needed to attach rigging points or to remove struts on casing will be done prior to containment being built.
  - If it is necessary to use a burning outfit after containment is built, the employees will use fire retardant cloth suits and appropriate leather protective equipment. The fire retardant cloth suits are to be bagged for laundering as detailed in "Laundering Procedures" (Section 11). The leathers shall be bagged as asbestos contaminated and stored appropriately until the next welding/cutting asbestos job. Ensure that negative air units are



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operating properly and that; at least, minimum vacuum is maintained.

**27.7.6 Entry Procedure**

- In locker room, strip to underwear. We have disposable undergarments available.
- Put on white protective clothing and proceed to the containment.
- Sign the sign-in log at entrance to containment. Enter clean room.
- Don protective coverall. If coveralls do not have elastic wristlets and anklets, use masking tape to tape wrists and ankles to gather excess fabric. (If experience has shown that the coveralls are tearing, two Tyvek coveralls or one Tyvek coverall plus a cloth coverall or rain suit may be required.)
- Enter the Equipment Room.
- Don respirator and hook up to Delmonox.
- Put up hood and enter work area.

**27.7.7 Casing Removal Procedures**

- Once casing removal starts, red asbestos tape is to be put on entrances and exits of enclosure.
- While working to remove casing, keeping area clean with a HEPA vacuum is important. Also, the use of amended water is imperative to keep dust to a minimum. Spray along seams as casing is removed.
- Remove casing, place in preplanned location and secure.
- All casing shall be washed inside the enclosure to ensure the removal of all asbestos fibers.

**27.7.8 Exit Procedure**

- Enter the Equipment Room.
- Wearing respirator, vacuum loose debris from clothing, respirator and other equipment, tools and floor of room.
- Wet wipe all tools that are to be taken out of the enclosure.
- Remove outer equipment (gloves, harness, rain suit, and boots) and set aside for reuse or disposal.
- Remove coverall and dispose of it.
- Be sure to wet all materials which are being disposed.
- Step through to clean room, clean respirator with HEPA vacuum, then remove respirator.
- Swab respirator with cleaning cloth. Place it in clean plastic bag if it is to be reused that day, or place it in container for cleaning.



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- Vacuum any debris on inner clothes which may have leaked in because of tears in the protective clothing.
- Dress in clean Tyvek.
- Wash hands with soap and water or waterless hand cleaner. Wet rags and put rags in container to be disposed of with asbestos contaminated waste.
- Sign the log sheet and proceed to lunch, break, or if the end of the day, to the shower room and shower.
- Employees shall shower at the end of the day, and then change into street clothes.

### **27.7.9 Completion of Job**

- When casing removal is complete, the responsibility of the enclosure will be transferred to the insulation contractor.
- The insulation contractor's "Competent Person" will inspect the enclosure prior to acceptance. Any repairs of nonconformance will be resolved prior to use.
- Insulation removal, reinsulation air-monitoring and enclosure teardown will proceed under the supervisor of the insulation contractor's "Competent Person."

## **28.0 Job Specific Work Procedure - ASBESTOS-CEMENT BOARD REMOVAL**

### **28.1 Application**

- 28.1.1 Provide guidance for the work group which will remove the corrugated asbestos/cement boards from existing facilities.

### **28.2 Scope**

- 28.2.1 This procedure applies to all facilities involving the removal of asbestos-cement board.
- 28.2.2 Basis for These Procedures: Air monitoring conducted during the disassembly of asbestos-cement board at the Susquehanna SES Construction weld shop disclosed airborne fiber levels consistently less than 0.1 f/cc. For this reason, the job does not need to be declared a regulated area. However, following are the procedures for controlling the potential hazards.



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### **28.3 Prerequisites**

- Asbestos Worker Certification
- Medical Examination
- Respirator Fit Testing
- Respirator Training
- Asbestos General Training (Asbestos-Understanding the Hazards)
- Asbestos Worker Training in Removal of Asbestos-Cement Boards Course **OR**
- Review of this procedure by a certified Asbestos Supervisor Document on Training Roster and in PQS.

### **28.4 Personal Protective Equipment**

28.4.1 Half mask or full face respirators with P-100 cartridges.

28.4.2 Head-to-toe asbestos disposable coveralls.

28.4.3 Gloves as appropriate for the job.

### **28.5 Monitoring Required**

28.5.1 Contact Safety Operations to take air samples when asbestos-cement board is removed. Bulk samples should determine if the cement board is ACM.

### **28.6 Equipment Needed**

28.6.1 Amended water

28.6.2 Poly bags labeled for asbestos disposal

28.6.3 HEPA vacuum if drilling will be done

28.6.4 Asbestos Job Log/Incident Report (form 4188)

### **28.7 Work Procedures**

#### **28.7.1 In-Place Care of Asbestos Cement Board**

- Hard surfaced asbestos wallboard (asbestos cement board) is not friable (i.e., not able to be crumbled under hand pressure) and, therefore, does not require special treatment unless it is damaged, repaired or removed.



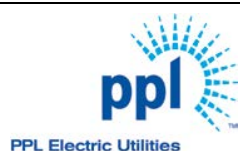
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- No special treatment must be taken if the asbestos wallboard is not going to be repaired or replaced and if the surface is intact. Unpainted surfaces should be covered with an encapsulate such as Lag Kote Encapsulate or an equivalent product used to encapsulate asbestos. If the surface is already covered with paint, no additional encapsulant will be necessary.
- Damaged surfaces shall be covered with an encapsulant or repaired/removed as directed below.
- The asbestos cement board should be labeled as an asbestos-containing hazard. This label should include information on who to contact for repair or removal when or if it is required.

**28.7.2 Repair/Removal**

- Conduct work under a certified asbestos supervisor.
- Conduct personal air monitoring for airborne asbestos fibers.
- Fill out asbestos job log.
- Don personal protective equipment and respirator.
- Place plastic below and/or under work areas to capture any falling debris.
- Keep asbestos-cement board saturated with amended water during removal to prevent emission of airborne fibers.
- Cut or remove fasteners holding material in place without breaking the material. Spray amended water on and around the fastener while removing the fastener to control any fiber release.
- If removal of fastener is unsuccessful, under a continuous mist of amended water, break asbestos board from under the fastener.
- Do NOT use high-speed abrasive wheels.
- Drills may be used ONLY with local exhaust HEPA ventilation.
- Follow standard asbestos disposal guidelines.
- Complete the asbestos job log.

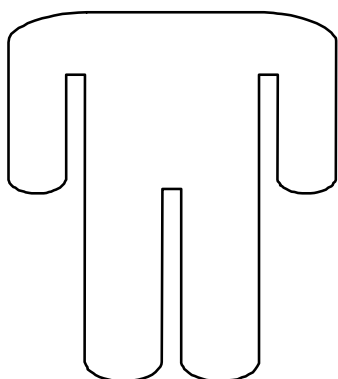


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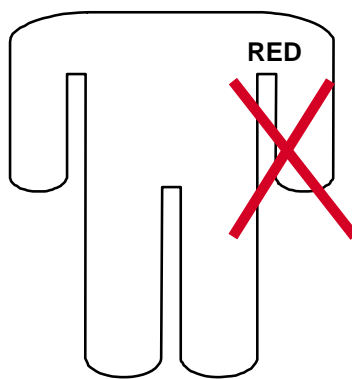
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**Attachment B - ASBESTOS COLOR CODING OF COVERALLS**

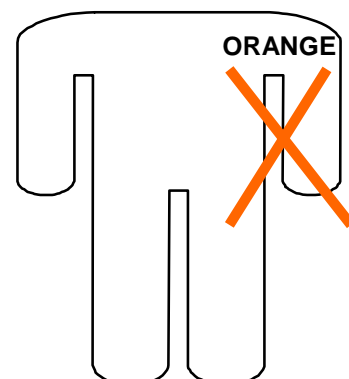
**COLOR CODING OF DISPOSABLE WHITE  
COVERALLS**



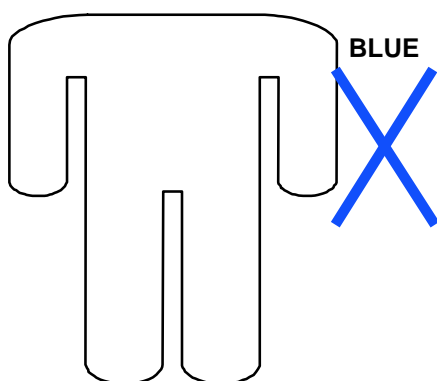
**INSIDE ASBESTOS ABATEMENT  
REGULATED WORK AREAS**



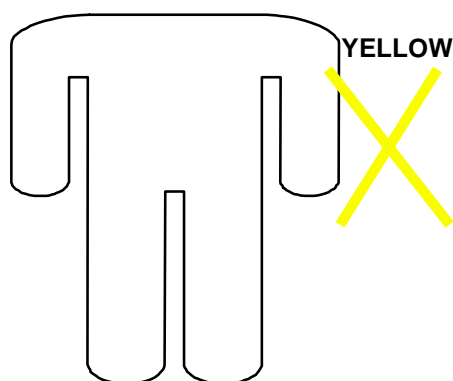
**INSIDE ASBESTOS VALVE  
PACKING AND GASKET**



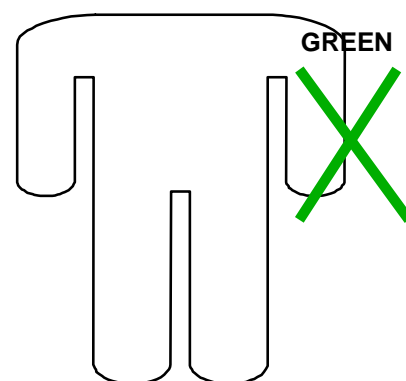
**INSIDE FLY ASH/ARSENIC  
REGULATED WORK AREAS**



**INSIDE MERCURY  
HANDLING/CLEAN-UP  
REGULATED WORK AREAS**



**INSIDE LEAD REGULATED  
WORK AREAS**



**ANY OTHER PROJECT OR WORK THAT  
DOES NOT REQUIRE REGULATED  
WORK AREAS, REGULATED HANDLING,  
OR REGULATED MATERIAL DISPOSAL**



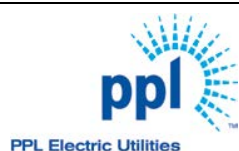
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## **1.0 PURPOSE/SCOPE**

- 1.1 This vehicle incident classification document is intended to provide guidance in classifying incidents involving company vehicles and personal vehicles used on Company business. It will also ensure incidents involving motor vehicles are properly and consistently classified throughout PPL.
- 1.2 This document is intended to:
  - 1.2.1 Encourage appropriate driver behaviors to report all vehicle incidents.
  - 1.2.2 Recognize the unique aspects of utility work.
  - 1.2.3 Enhance tracking of motor vehicle incidents.
  - 1.2.4 Support the reporting of vehicle incidents to industry organizations.
  - 1.2.5 Facilitate lessons learned to protect employees and the public.
  - 1.2.6 Promote consistency in reporting across all business units.

## **2.0 RESPONSIBILITIES**

- 2.1 TDI Health and Safety will complete the CCATS transportation consequence of all vehicle incidents.

## **3.0 APPLICABILITY**

- 3.1 This procedure is intended to provide guidance in classifying incidents involving company vehicles and personal vehicles used on Company business.

## **4.0 TERMS AND DEFINITIONS**

- 4.1 **EEI Non-Recordable** – The following types of events are not EEI Recordable motor vehicle incidents:
  - 4.1.1 Damage to a Company Fleet Vehicle or personal vehicle used for company business solely caused by stone chips, flying birds, or contact with live animals.



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- 4.1.2 Damaged Company Fleet vehicles or personal vehicles that are properly parked.
- 4.1.3 Normal wear and tear of vehicle components.
- 4.1.4 Mechanical failures.
- 4.1.5 Flat tires.
- 4.1.6 Minor bumper dings and dents.
- 4.2 **EEI Recordable** – Any occurrence involving a motor vehicle which results in death, injury, or property damage, unless such vehicle sustained conditions note in the EEI Non-Recordable definition. Who was injured, what property was damaged or to what extent, where it occurred, or who was responsible is not a factor
- 4.3 **Fleet Vehicle** - a Company vehicle owned, leased [rental], or contracted [mileage reimbursement i.e. personal vehicle], and is operated in the service of the Company.
- 4.4 **Motor Vehicle** – is any licensed motor vehicle that can be operated upon a roadway/property customarily open to the public. The load on a vehicle is to be considered a part of the vehicle. (Any trailer or equipment in tow is considered part of the load.) Not included are:
  - 4.4.1 Industrial forklifts and cranes, backhoes and excavators.
  - 4.4.2 Bicycles or similar equipment.
  - 4.4.3 All-terrain and similar type vehicles.
- 4.5 **Motor Vehicle Incident** – any incident that involves a Fleet Vehicle that results in injury to an occupant or the public or damage to the fleet vehicle or public property.
  - 4.5.1 Incidents involving the use of incidental equipment such as cranes, aerial equipment, and related equipment mounted on a motor vehicle (mobile work platform), industrial forklifts, backhoes, excavators, bicycles, All-terrain and similar type vehicles are not motor vehicle incidents, but rather entered in CCATS as a Property Damage Consequence.
- 4.6 **Non-Preventable Motor Vehicle Incident** - are those incidents where the employee did everything reasonably possible to avoid the event.



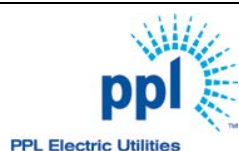
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- 4.6.1 The following are situations where vehicle damages, had they occurred, would be considered non-preventable:
- 4.6.1.1 Fleet Vehicles properly parked where permitted,
  - 4.6.1.2 Fleet Vehicles traveling at lawful speeds and in proper lane,
  - 4.6.1.3 The driver was legally stopped in lawful compliance with sign, signal or other legitimate traffic control device or person,
  - 4.6.1.4 The driver was in proper lane waiting to turn,
  - 4.6.1.5 Road debris was kicked up by other vehicle causing damage,
  - 4.6.1.6 Vehicle encounters concealed object/conditions which could not be reasonably expected to be identified by the employee or other crew members,
  - 4.6.1.7 Vehicle hits an object that encroaches into a public space and there were no other feasible options other than to enter that space (e.g. low hanging traffic signals, inadequate tree clearances along public maintained streets/roadways, etc.). Incident analysis will assist in determining whether this event was preventable or not,
  - 4.6.1.8 Vehicle incidents that involve damage to company or public property in which the member of the public (e.g. driver, pedestrian, property owner) was at fault and it is determined by the analysis that the company employee followed all safety rules and used reasonable care to avoid the incident,
  - 4.6.1.9 Vandalism or theft,
  - 4.6.1.10 Live wildlife.

**4.7 Off-Public Roadway Incident** – any occurrence involving a Fleet Vehicle or personal vehicle used on Company business that is:

- 4.7.1 Moving on gated Company-owned property, private property, right-of-ways, other roadways not open to public use.



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4.8 **Preventable Motor Vehicle Incident** –Motor vehicle Incident in which the driver failed to do everything that reasonably could have been done to avoid the incident.

4.1.1 Any motor vehicle event on public roadway or off public roadway is considered preventable by the employee unless listed in the Non-Preventable Incident definition.

4.9 **Properly Parked** – is a Fleet Vehicle that is completely stopped and parked where it is legal to park. Properly parked includes appropriate precautions such as wheels chocked as needed, doors closed, parking brake set, etc.

4.9.1 A vehicle that runs away without a driver is not considered to have been properly parked.

4.9.2 A vehicle standing in traffic in response to a sign, signal, officer, or traffic condition is not properly parked.

4.9.3 A disabled vehicle is not considered properly parked unless it is off the main traveled portion of the highway and displays proper warnings as required.

4.10 **Public Roadway Incident** – any occurrence involving a Fleet Vehicle on a roadway open to the public that results in:

4.10.1 Death or injury.

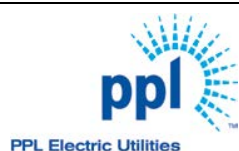
4.10.2 Damage to a Fleet Vehicle and/or public property — any contact with a public vehicle requires the notification of local law enforcement.

4.10.3 Exception: Fleet Vehicles properly parked on public property are considered Non-Preventable Off-Public Roadway Incidents.

4.11 **Right-of-Way** – is land-owner approved access; PPL-owned access roads to substations and/or distribution and transmission lines guarded by lock and gate.

4.12 **Roadway Open to the Public** – a driving surface open to the public as a matter of right or custom for motor vehicle travel. Roadways open to the public consist of interstate highways, state routes; county, township and borough roads; non-company fueling stations, parking lots; roadways approved for public access not blocked by gate.

Note: Roadways in question will be evaluated by the analysis team to determine access rights.



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## **5.0 MAIN BODY**

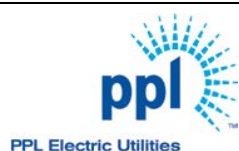
- 5.1 This Motor Vehicle Incident Classification safety procedure is largely based on definitions. These definitions and examples provided will help the Safety Professional in determining how CCATS should be filled out.
- 5.2 Refer to Attachment A – Decision Tree as a guide. Once a Motor Vehicle Incident occurs, if it meets the definition of a Motor Vehicle Incident, a “First Report of Incident” is initiated in CCATS identifying any or all of the Vehicle related questions:
  - 5.2.1 This incident resulted in damage to a PPL Vehicle.
  - 5.2.2 This incident resulted in damage to a personal/leased vehicle being used on PPL Business
- 5.3 After the CCATS “First Report of Incident” is completed the Safety Professional will populate the information needed within the Transportation Consequence.
  - 5.3.1 Specific questions are asked within the Transportation Consequence that, based on the answer, will properly classify the event as either EEI recordable, EEI non-recordable or Public Roadway Incident or Off-Public Roadway Incident and either Preventable or Non-Preventable.
  - 5.3.2 The Safety Professional will need to work directly with the supervisor and/or investigating team to properly answer the questions asked within the Transportation Consequence.
- 5.4 Once all the questions are answered and the Transportation Consequence is saved, the incident classification will be shown on the incident record. At this time, the Safety Professional is responsible to add the vehicle information to the record. Once the vehicle information is added to the record, the record is to be closed by the Safety Professional.
- 5.5 Examples of incidents involving a Fleet Vehicle are shown below. Please note, the below interpretations may not be all-inclusive and require further classification of each to determine if the incident was a **Public Road Incident** or an **Off Public Road Incident** and whether or not the event was Preventable or Non-Preventable.
  - 5.5.1 Animals - Incidents that result in death, injury, or property damage caused by collision with an animal are EEI Non-Recordable motor vehicle incidents.



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- 5.5.2 Driven by Non-Company Personnel - Motor vehicle incidents that occur when persons not in employment of the company (including independent staff contractors) are not Motor Vehicle Incidents. These would not need to be entered into CCATS.
- 5.5.3 Driverless Motor Vehicle (Runaways, etc.) - Death, injury, or property damage resulting from an incident caused by a driverless motor vehicle in motion is a **motor vehicle incident**.
- 5.5.4 Injury to Pedestrians or Bystanders - Incidents that result in death or injury to pedestrians or bystanders caused by contact with a moving company vehicle, or an object carried on the vehicle or set in motion by the vehicle are **motor vehicle incidents**.
- 5.5.5 No Damage or Injury - An incident that may be the result of a driver's error, but does not result in a contact involving death, injury, or public vehicle or property damage, is not a **motor vehicle incidents**. These would be entered into CCATS as an Incident which COULD have caused damage to the vehicle.
- 5.5.6 Non-Collision incidents - Non-collision incidents of the upset, rollover, jackknife, or run-off-the road type that cause death, injury, or damage are **motor vehicle incidents**.
- 5.5.7 Carbon Monoxide - If a driver becomes drowsy from breathing carbon monoxide and the vehicle then runs off the road and turns over, it is a **motor vehicle incident**.
- 5.5.8 Objects Falling/Flying onto a Motor Vehicle - Damage, injury or death resulting from objects falling or flying on a vehicle - for example, a tree falling over a vehicle in a wind storm, objects dropped from an overpass or a building construction job, rock or debris kicked up from road surface are considered to be a **motor vehicle incidents**. These are considered to be EEI Non-Recordable incidents.
- 5.5.9 Objects or Liquids Falling from a Motor Vehicle - When objects or liquids fall from a motor vehicle (or are subsequently identified with the vehicle that lost its load), and directly and immediately cause death, injury, or property damage, the occurrence is a **motor vehicle incident**.
- 5.5.10 Towing or Pushing - Damage, injury or death resulting from towing or pushing operations is a **motor vehicle incident**.



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- 5.5.11 Mechanical Failures - Result in damage to the parts of the vehicle only (clutch burnouts, gear stripping, tire failures, etc) are not motor vehicle incidents. Failures (such as tire or brake failures) that result in incidents that cause death, injury, or property damage are **motor vehicle incidents**.
- 5.5.12 Persons Falling from Motor Vehicle - Death, injury, or property damage that results from a persons falling from moving motor vehicles is a **motor vehicle incident**.
- 5.5.13 Repair and Servicing - If death, injury or property damage occurs because of an incident while the vehicle is being "test" driven as part of the maintenance or repair procedure (to test brakes, etc.) the occurrence is a **motor vehicle incident**.
- 5.5.14 Standing in Traffic - A vehicle standing in traffic in response to an officer, signal, stop sign, or to traffic conditions is not **properly parked**. Therefore, if the vehicle is involved in an incident, for example, if it is struck by another vehicle, the occurrence is a **motor vehicle incident**.
- 5.5.15 Two Company Vehicles - If two company vehicles collide the incident is counted as two **motor vehicle incidents** unless one of the vehicles was **properly parked**.
- 5.5.16 Vehicle Evasive Action - If death, injury, or property damage occurs from an incident caused by an effort of the driver to evade some person or object, the occurrence is a **motor vehicle accident**.

## **6.0 REFERENCES**

- 6.1 American National Standards Institute (ANSI) D16.1-2007 "Manual on Classification of Motor Vehicle Traffic Accidents."
- 6.2 American National Standards Institute (ANSI) D15.1 "Method of Recording and Measuring Motor Vehicle Accident Experience."
- 6.3 National Safety Council (NSC), "Guide to Determine Vehicle Accident Preventability."
- 6.4 American Gas Association (AGA), Guidelines for Natural Gas Industry Safety Performance Measurement through Statistical Reporting

## **7.0 REGULATORY REQUIREMENTS – N/A**



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## 8.0 TRAINING / SAFETY

8.1 PPL EU Safety Rule Book

## 9.0 COMPLIANCE AND EXCEPTIONS - N/A

## 10.0 ATTACHMENTS

10.1 Attachment A – Decision Tree

## 11.0 RECORD RETENTION

11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

11.2 This document shall be reviewed every 5 years by Safety Operations.


11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	02	Date	03/31/2017	Effective	03/31/2017
<b>Prepared by:</b>		Jared Dyer, Supervisor – Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Dalton Shorts, Steve Mondschein, Elizabeth Mckay, Brian Kostik, and Deborah Sweinhart			
<b>Approved by:</b>		Brian Matweecha, Safety Manager			
<b>Revision Comments:</b>		Added Motor Vehicle Incident decision tree. Contacts with live animal events are now excluded from MVI rates and counts. Added current terminology definitions for EEI recordable, EEI Non-Recordable.			

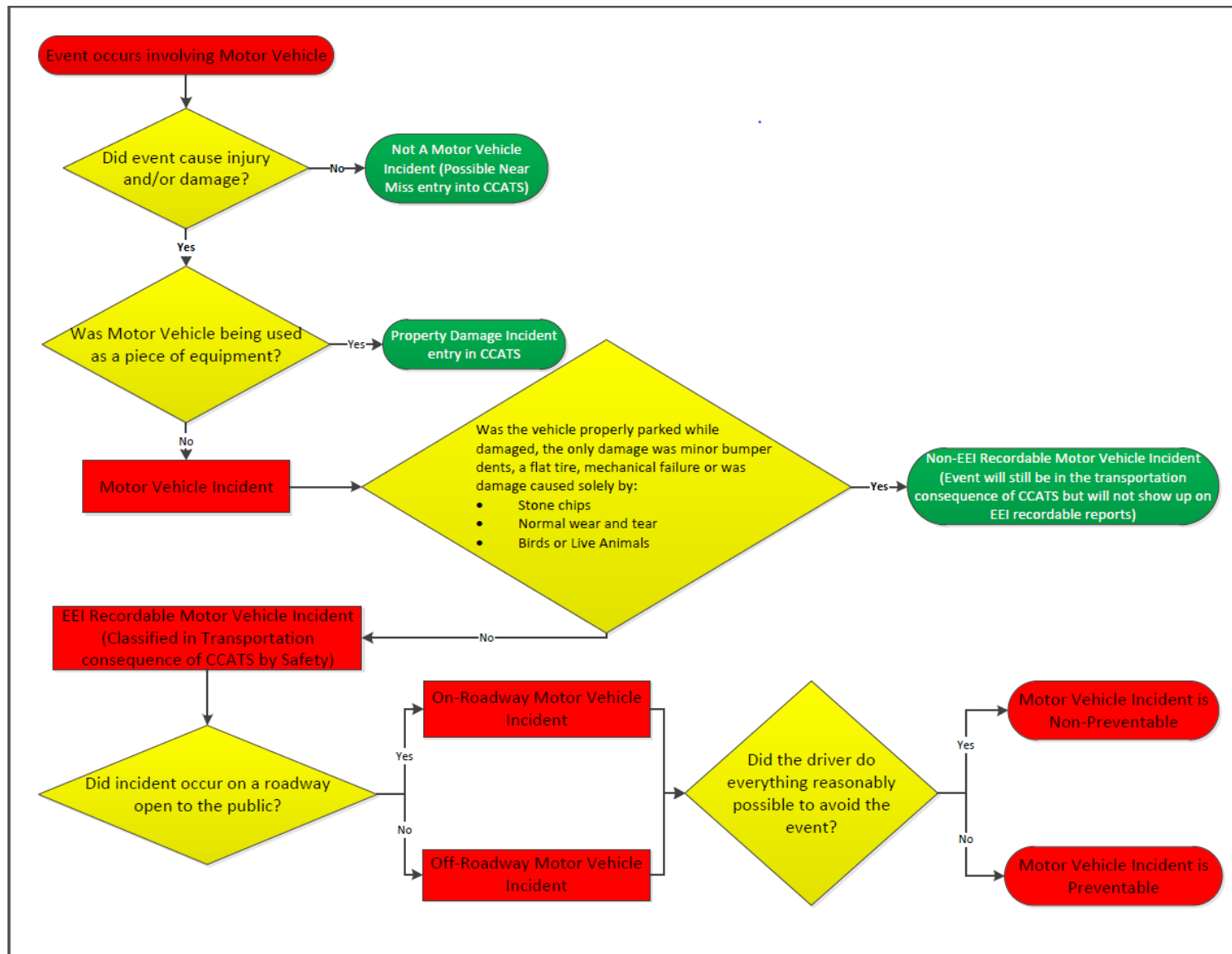
Rev	01	Date	11/03/2015	Effective	12/01/2015
<b>Prepared by:</b>		Jared Dyer, Sr. Health and Safety Specialist			
<b>Reviewed by:</b>		Rich Horan, Sr. Health and Safety Specialist, Steve Mondschein, Health and Safety Specialist			
<b>Approved by:</b>		Brian Zickefoose. Safety Manager			
<b>Revision Comments:</b>		Made edits to SP to align with CCATS upgrade as well as enhanced clarity around vehicle classifications based on customer feedback.			

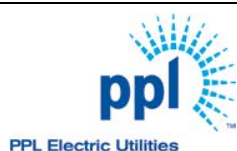


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<b>Rev</b>	00	<b>Date</b>	06/26/2012	<b>Effective</b>	06/26/2012
<b>Prepared by:</b>	David Hughes				
<b>Reviewed by:</b>	Jacque Creamer, Adam Frederick, Richard Horan				
<b>Approved by:</b>	Barry Downes, Safety Manager				
<b>Revision Comments:</b>	General Safety Procedure converted to EU Safety Procedure				

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**SP 43**  
**SAFETY PROCEDURE**  
**HANTAVIRUS RODENT CLEANUP**

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**SP 43**  
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## **1.0 PURPOSE/SCOPE**

- 1.1 This procedure provides guidance for handling rodent infestations that occur in company facilities. However substations and vaults are currently recognized to be the primary application of these procedures.
- 1.2 For more information about this guideline, contact your local safety professional.

## **2.0 RESPONSIBILITY – N/A**

## **3.0 APPLICABILITY**

- 3.1 This procedure provides guidance for handling rodent infestations that occur in company facilities

## **4.0 TERMS AND DEFINITIONS – N/A**

## **5.0 MAIN BODY**

- 5.1 Hantavirus pulmonary syndrome is a serious respiratory disease that has been found mostly in rural areas of the western United States. However, several cases have occurred in Pennsylvania.
- 5.2 The disease is caused by a Hantavirus that is carried by rodents and passed on to humans through infected rodent urine, saliva, or droppings. Hantavirus pulmonary syndrome is a rare disease.
  - 5.2.1 If activities take you to areas where you may become exposed to rodents and their urine, saliva, or droppings, take the precautions listed within this guideline. While the deer mouse is the primary carrier of the virus that causes Hantavirus pulmonary syndrome, in Pennsylvania, the white-footed mouse is recognized to be a carrier.
- 5.3 Hantavirus is spread from wild rodents to people. The virus, which is found in rodent urine, saliva, and feces, gets in the air as mist from urine and saliva or dust from feces. Breathing in the virus is the most common way of becoming infected; however, you can also become infected by touching the mouth or nose after handling contaminated materials.
- 5.4 Hantavirus is not spread from person to person. You cannot become infected by being near a person who has Hantavirus pulmonary syndrome. The virus, which is able to survive in the environment (for example, in contaminated dirt and dust); can be killed by most household disinfectants, such as bleach or alcohol.



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- 5.5 Symptoms of Hantavirus pulmonary syndrome usually appear within 2 weeks of infection but can appear as early as 3 days to as late as 6 weeks after infection. The primary symptom of this disease is difficulty in breathing, which is caused by fluid build-up in the lungs and quickly progresses to an inability to breathe. First symptoms are general and flu-like: fever (101-104 F); headaches; abdominal, joint, and lower back pain; sometimes nausea and vomiting.
- 5.6 If any combination of the symptoms described above, especially difficulty in breathing, appear after direct or indirect exposure to rodents, contact your doctor or public health clinic immediately and be sure to mention your exposure to rodents. No cure or vaccine is yet available against Hantavirus infection. The sooner after infection medical treatment is sought, the better the chance of recovery. Call the Centers for Disease Control and Prevention 1-800-532-9929 for additional technical information about Hantavirus.
- 5.7 Prevention Techniques
- 5.7.1 Affected facilities should be secured against rodent entry by sealing holes, ducts, door gaskets against the entry of rodents.
- 5.7.2 Mothballs (para-dichlorobenzene, PDB) have been used to limit rodent infestations in cabinets and other small enclosures. PDB may be used if it is compatible with equipment and does not pose inhalation hazards to employees.
- 5.8 Incidental Infestations
- 5.8.1 Incidental cleanups are characterized by:
- a) Few square feet of rodent droppings, urine spotting
  - b) Cleanup does not involve electrical components incompatible with water cleanup
- 5.8.2 Personal protective equipment:
- a) 3M 8210 dust mask or equivalent
  - b) Gloves: latex or other water impervious
  - c) Disposable coverall (Tyvek or equivalent), if needed to protect clothing from debris.
- 5.8.3 Cleanup Procedure:
- a) Disinfectants: Use Clorox (diluted 1.5 cups per gallon water), Lysol liquid (diluted per manufacturer's recommendation), Lysol spray, or equivalent disinfectants.



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- b) Spray dead rodents, rodent nests, droppings, and other items that have been tainted by rodents. Soak affected materials thoroughly.
- c) Place debris into a plastic bag and seal it.
- d) Dispose of plastic bag of debris with regular trash.
- e) As appropriate, after the debris has been removed, mop floors with a solution of water, detergent, and disinfectant.
- f) Carpets can be effectively disinfected with household disinfectants or by commercial-grade steam cleaning or shampooing.
- g) To avoid generating potentially infectious aerosols, do not vacuum (with standard household-type machine) or sweep dry surfaces before mopping with disinfectants.

5.9 Significant Infestations and Cleanups Where Water may not be safely applied.

5.9.1 Conditions:

- a) Switchgear, electrical or electronic equipment
- b) Extensive contamination, many square feet

5.9.2 Personal Protective Equipment and Equipment:

- a) Gloves: latex or other water impervious
- b) Disposable coverall (Tyvek or equivalent)
- c) Boots or disposable shoe covers, as needed to reduce contamination
- d) HEPA vacuum, (asbestos or fly ash type)
- e) Gloves, latex or other water resistant
- f) Respirator: half mask or full face, HEPA/ P100 cartridges

5.9.3 Cleanup Procedure:

- a) To the extent feasible, follow cleanup procedures for incidental infestations.
- b) Where water cannot be applied, place larger articles of dry debris into a plastic trash bag, then spray it with disinfectants
- c) Vacuum water sensitive areas. At the end of the cleanup, while wearing at least gloves and a respirator, empty debris into a plastic



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trash bag and spray it with disinfectant. Dispose of plastic bag of debris with regular trash.

**5.10 Pest Control Contractors**

5.10.1 Pest control contractors are an additional resource that may be used to clean rodent infestations.

5.10.2 Assure that contractor approach is similar to these guidelines.

5.10.3 Assure contract personnel are protected from electrical hazards.

**6.0 REFERENCES**

6.1 PPL EU Safety Rule Book

6.2 Centers for Disease Control and Prevention (CDC) web page:  
<https://www.cdc.gov/hantavirus/index.html>

**7.0 REGULATORY REQUIREMENTS - N/A**

**8.0 TRAINING / SAFETY**

8.1 It is recommended that supervisors provide a copy of this procedure to employees and review the guidelines with them. According to OSHA, annual training is not required.

8.2 Document the review/training of this procedure on a standard meeting roster.

**9.0 COMPLIANCE AND EXCEPTIONS – N/A**

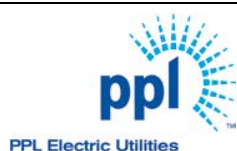
**10.0 ATTACHMENTS – N/A**

**11.0 RECORD RETENTION**

11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

11.2 This document shall be reviewed every 5 years by Safety Operations.

11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



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## 12.0 RECORD OF REVISIONS

Rev	01	Date	4/27/2017	Effective	05/01/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One-Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Health Services, Denis Nika – Occupational Nurse. Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Added reference and link to CDC Hantavirus website			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





**SP 44**  
**SAFETY PROCEDURE**  
**UNDERGROUND CABLE LOCATING**  
**PPL ELECTRIC UTILITIES FACILITIES**

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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to assure that PPL Electric Utilities employees are trained on the proper use of specific cable locating equipment.
- 1.2 Training is required on PPL Electric Utilities policy and procedures for dig-in prevention and the current [Pennsylvania 811 Underground Utility Line Protection Act](#).

## **2.0 RESPONSIBILITY – N/A**

## **3.0 APPLICABILITY**

- 3.1 This procedure is to assure that PPL Electric Utilities employees have had training on the specific cable locating instrument(s) they are using, any instrument(s)

## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Qualified Instructor** – An individual, who by job experience and/or training, is knowledgeable in the operation of the specific equipment they are performing training on. A qualified instructor can be a PPL Electric Utility employee, vendor's trainer or approved third party trainer.

## **5.0 MAIN BODY**

### **5.1 OPERATIONAL INSTRUCTION PROCEDURE**

- 5.1.1 Employees shall not operate cable locating equipment in the production environment unless they have received training on the specific unit they are using from a qualified instructor.
- 5.1.2 New or inexperienced employees, who have completed all required training and have passed the testing on a specific locating instrument, must have on-the-job training with an experienced locator. After on-the-job training has been completed, a qualified instructor must assess the employee's ability before the employee can perform the locating task alone. This assessment must be documented.

## **6.0 REFERENCES**

- 6.1 [Pennsylvania 811 Underground Utility Line Protection Act](#)
- 6.2 PPL Electric Utilities Safety Rule Book



**SP 44**  
**SAFETY PROCEDURE**  
**UNDERGROUND CABLE LOCATING**  
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## **7.0 REGULATORY REQUIREMENTS - N/A**

## **8.0 TRAINING / SAFETY**

- 8.1 Train on the [Pennsylvania 811 Underground Utility Line Protection Act](#).
- 8.2 Employees must be trained in the proper procedure to be used in performing the task of locating and marking PPL Electric Utilities facilities and the proper responses back to the individual/company
- 8.3 Training documentation will include an attendance roster, Job Performance Measure (JPM) or Practical Exam (PE) and knowledge test if one is included in the training.
- 8.4 When a PPL Electric Utilities qualified instructor conducts a training exercise; the qualified instructor will be responsible for ALL documentation of the course and assure it is forwarded to the appropriate person for entry into the Employee's Training Record (PQS - Personal Qualification System or any other system used for tracking individual's training).
- 8.6 If the person conducting the training is not a PPL employee, the PPL Electric Utilities employee who coordinated the training is responsible to assure that the documentation of the course is forwarded to the appropriate person for entry into the Employee's Training Record (Personnel Qualifications System or any other system used for tracking individual's training).
- 8.7 Each model/type of cable locating equipment shall be approved by the EU Tool & Equipment Committee and will have its own PPL course, course tracking number and will be cataloged by Technical Training.
- 8.8 Any time an employee is trained or refreshed on using locating equipment and/or policy/procedure change, it shall be documented and an attendance roster will be completed for that training and entered into the system used for tracking individual's training.

## **9.0 COMPLIANCE AND EXCEPTIONS – N/A**

## **10.0 ATTACHMENTS – N/A**



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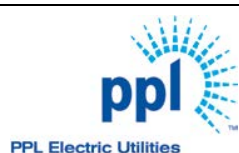
## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	07/13/2017	Effective	07/13/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure information contained in this procedure meets current RMC standards. Included updated PA811 web link.			

Rev	00	Date	07/31/2012	Effective	07/31/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			

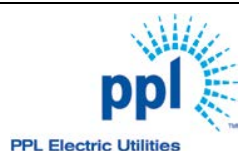


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**SAFETY PROCEDURE**  
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## **SP 45 SAFETY PROCEDURE INDUSTRIAL HYGIENE PLAN**

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### **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of the Industrial Hygiene (IH) program is to define requirements that provide a safe and healthy work environment for all employees from hazardous substances, health hazards, and environmental factors or stresses arising in or from the workplace that may cause sickness, impaired health, significant discomfort or disorder.
- 1.2 The IH Program is provided to help anticipate, recognize, and evaluate workplace health hazards so that appropriate control measures (including process change, material substitutions, engineering and administrative controls) can be established to protect employee health.

### **2.0 RESPONSIBILITY**

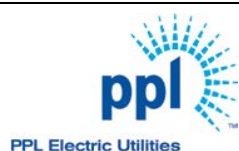
#### **2.1 Employees**

##### **2.1.1 All employees shall:**

- a) Be aware of and comply with established IH program requirements.
- b) Notify supervisory personnel immediately of any observed or suspected harmful or unsafe working conditions or harmful agent.
- c) Inspect, use, maintain, and store PPE properly and immediately notify a supervisor or Safety Professional whenever PPE is damaged, defeated, or not worn in situations involving exposure or potential exposure to a chemical or hazardous material where PPE is required.

##### **2.1.2 When an **employee** is designated by Safety Operation's Safety Professional or designee to wear personal exposure monitoring equipment, the employee shall:**

- a) Follow the instructions in the care and maintenance of the equipment.
- b) Protect the integrity of the monitoring equipment by preventing any tampering, altering, defeating, or in any way compromising the personal exposure monitoring equipment or data obtained by the equipment.
- c) Maintain the equipment and return the equipment as instructed.
- d) Immediately report any damage, alarms, or unusual conditions involving the personal exposure monitoring equipment to your Supervisor.



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2.2 Managers

- 2.2.1 Maintain safe and sanitary conditions in work areas occupied by employees.
- 2.2.2 Ensure a hazard analysis is performed by the EU Safety Professional to identify hazard controls and exposure monitoring requirements for changed conditions, including but not limited to new work practices, new or revised job positions, and changes in the work environment.
- 2.2.3 Ensure subordinate employees receive adequate instruction in the health and physical hazards associated with a task before assigning that employee to perform the task.
- 2.2.4 Correct a condition or stop the associated activities when it is known or suspected that an unsafe condition or work practice exists.
- 2.2.5 Submit a SDS to the EU Safety Department for all chemicals that are desired to be used. EU Safety Department reviews chemical information before procurement of a substance(s) can occur. This team reviews SDS, treatment formulas, and other chemical or hazardous material data to ensure the chemical can be acquired and used safely.

2.3 Industrial Hygiene Plan Manager

- 2.3.1 Manage the IH Sampling Plan to ensure objectives are met.
- 2.3.2 Coordinate and manage services performed by a third party IH Certified Vendor (e.g. 1Source Safety and Health, Inc., etc.)
- 2.3.4 Establish IH requirements in accordance with applicable standards, including federal and state codes and regulations and contemporary industry standards of good practice.
- 2.3.5 Manage the development and implementation of any IH training programs.
- 2.3.7 Coordinate with the other EU Safety Professionals to ensure environmental, health, and safety audits address IH and work health concerns, as appropriate.
- 2.3.8 Assist site management in the technical aspects of compliance with this program, and provide technical direction to other EU Safety Professionals.
- 2.3.9 Coordination with Planning and Design Staff to anticipate and control health hazards that proposed facilities and/or operations would introduce.
- 2.3.10 Ensure record retention protocol is followed.



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### 2.4 Safety Operations

- 2.4.1 Conduct hazard analyses to anticipate, identify, evaluate, and control environmental factors and stresses found in the workplace.
- 2.4.2 Coordinate with the Industrial Hygiene Plan Manager all of the following –
  - 2.4.2.1 Report conclusions of each hazard analysis and any recommended control measures to line managers and supervisors.
  - 2.4.2.2 Conduct monitoring and measurements to evaluate environmental factors and stresses found in the workplace as required by regulations, license, or sound safety practices.
  - 2.4.2.3 Report results to the affected employees, line managers, and supervisors to make recommendations for appropriate PPE and/or working conditions to control facility project personnel exposure to chemicals or hazardous materials.
  - 2.4.2.4 Establish occupational exposure limits for employee exposures to chemicals or hazardous materials wherever regulations do not exist for monitoring and PEL is not cited.

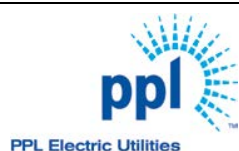
## 3.0 APPLICABILITY

3.1 This program applies to all PPL Electric Utilities operations.

## 4.0 TERMS AND DEFINITIONS

4.1	ACGIH	American Conference of Governmental Industrial Hygienists
	AIHA	American Industrial Hygiene Association
	CFR	Code of Federal Regulations
	DOT	U.S. Department of Transportation
	EHS	Environmental, Health, and Safety
	IARC	International Agency for Research on Cancer
	IH	Industrial Hygiene
	MSDS	Material Safety Data Sheets
	NIOSH	National Institute for Occupational Safety and Health
	NTP	National Toxicology Program
	OSHA	Occupational Safety and Health Administration
	PEL	Permissible Exposure Limit
	PPE	Personal Protective Equipment
	PPLEUCOC	PPL Electric Utilities Chemical Oversight Committee
	RAC	Remedial Action Contractor
	TAC	Technical Assistance Contractor
	TLV	Threshold Limit Value
	TLV-TWA	Threshold Limit Value Time Weighted Average
	EHS	Environmental Health & Safety





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- 4.2 **At-risk Employee** – Any employee who by virtue of work activity may be exposed to hazardous substances, health hazards, and/or environmental factors or stresses arising in or from the workplace.
- 4.3 **American Conference of Governmental Industrial Hygienists (ACGIH)** – An organization of professionals in governmental agencies or educational institutions engaged in occupational safety and health programs. ACGIH develops and publishes recommended occupational exposure limits for chemical substances and physical agents.
- 4.4 **Action Level** – The exposure level at which the Occupational Safety and Health Administration (OSHA) regulations for specific toxic and hazardous substances require workplace air analysis, employee training, medical monitoring, and recordkeeping to take effect. This level is generally one-half the Threshold Limit Value (TLV) or Permissible Exposure Level (PEL).
- 4.5 **Biological Exposure Indices** – Numerical values based on ACGIH procedures to determine the amount of material the human body absorbs by measuring the material or its metabolic products in tissue, fluid, or exhaled air.
- 4.6 **Biological Monitoring** – Analysis of body substances, such as blood or urine, to determine the extent of hazardous material absorption or accumulation.
- 4.7 **Carcinogen** – A chemical that has been designated as a carcinogen according to the following criteria:
- 4.7.1 Chemicals listed by the International Agency for Research on Cancer (IARC) as Group 1, Group 2A, or Group 2B carcinogens.
  - 4.7.2 Chemicals listed as Type I or Type 2 carcinogens in the Annual Report on carcinogens (latest edition) published by the National Toxicology Program (NTP).
  - 4.7.3 Any substance regulated by OSHA as a carcinogen in the Title 29 Code of Federal Regulations Part 1910 (29 CFR 1910), Subpart Z, "Toxic and Hazardous Substances."
  - 4.7.4 Substances listed as A1 or A2 carcinogens by the American Conference of Governmental Industrial Hygienists in Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices (TLV booklet), Appendix A, "Carcinogenicity."
- 4.8 **Designee** – A designee of an EU Safety Professional will usually be a third party contractor (e.g. 1Source Safety and Health, Inc.) that specializes in the field of Industrial Hygiene to perform hazard assessments, personal sampling, and analysis.
- 4.9 **Ergonomics** – A multidisciplinary engineering science that includes the fields of physiology, anthropology, engineering, and psychology; with the goal of designing and adapting the equipment, work, and the environment to meet human capabilities and limitations.



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- 4.10 **Environmental Factors and Stressors** – Workplace conditions that could represent unacceptable exposure to employees, including chemical (e.g., liquid, particulate, vapor, gas), physical (e.g., electromagnetic radiation, noise, vibration, magnetic fields), biological (e.g., agents of infectious diseases) and ergonomic (e.g., body position in relation to the task, repetitive motion, mental or physical fatigue).
- 4.11 **Hazard Analysis** – A written report developed either independently by an industrial hygienist or as part of an integrated team effort that identifies and evaluates potential occupational exposures to hazardous substances, health hazards, or physical stresses and indicates recommended risk mitigation measures.
- 4.12 **Hazardous Substance** – Any substance designated in the following list to which exposure may adversely affect the health or safety of employees:
- 4.12.1 Any substance defined under Section 101(14) of the Comprehensive Environmental Response, Compensation and Liabilities Act.
  - 4.12.2 Any biological agent or other disease-causing agent that after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction), or physical deformations in those persons or their offspring.
  - 4.12.3 Any substance listed by the U.S. Department of Transportation (DOT) as a hazardous material pursuant to 49 CFR 172.101, "Hazardous Materials Table."
  - 4.12.4 A waste or combination of wastes as defined by the U.S. Environmental Protection Agency in 40 CFR 261, "Identification and Listing of Hazardous Waste" or those substances defined by DOT in 49 CFR 171, "General Information, Regulations, and Definitions," as hazardous.
  - 4.12.5 Any substance which is a physical hazard or health hazard as defined by OSHA in 29 CFR 1910.1200, "Hazard Communication."
- 4.13 **Health Hazard** – A chemical, mixture of chemicals, physical or biological agent for which there is significant evidence based on at least one study conducted in accordance with established scientific principles demonstrating that it may cause acute or chronic health effects in exposed employees. The term "health hazard" includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic system, and agents that damage the lungs, skin, eyes, or mucous membranes. It also includes stress resulting from temperature extremes.



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- 4.15 **National Institute of Occupational Safety and Health (NIOSH)** – The agency of the Public Health Service that tests and certifies respirators and air-sampling devices. NIOSH recommends exposure limits to OSHA for substances, chemicals, and hazardous materials.
- 4.16 **Permissible Exposure Limit (PEL)** – OSHA-regulated maximum concentration of a chemical or hazardous material that a worker may be exposed for 8 hours per day 40 hours per week where engineering, administrative or Personal Protective Equipment (PPE) controls are not required.
- 4.17 **Threshold Limit Value (TLV)** – Refers to airborne concentrations of substances or levels of physical agents and represents the conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. These guidelines are set by ACGIH.
- 4.18 **TLV Time-Weighted Average (TLV-TWA)** – The allowable time-weighted average concentration for a normal 8-hour workday or 40-hour week.
- 4.19 **TLV Short-term Exposure Limit** – The short-term exposure limit or maximum concentration for a continuous exposure of 15 minutes, with a maximum of four such periods per day and with at least 60 minutes between successive exposures at the short-term exposure limit, provided that the TLV-TWA is not exceeded.
- 4.20 **TLV Ceiling** – The concentration that should not be exceeded at any time.

## **5.0 MAIN BODY**

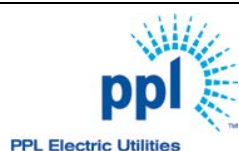
### **5.1 Records**

- 5.1.1 All employee exposure records must be maintained for employment plus 30 years (these records must be archived during this time period). A copy of exposure records shall be provided to the affected employee and to the Occupational Nurse for follow-up with a medical provider, as needed.

### **5.2 Process**

#### **5.2.1 Administrative Controls**

- a) The use of administrative controls is encouraged (e.g., work plans, procedures, permits, task-practice exercises, training, use of qualified personnel); however, the prescribed order of preference for mitigation of occupational health risk is:
- Elimination or Substitution
  - Engineering controls
  - Administrative controls (e.g., shortened work periods)
  - Written communication (e.g. procedures and signs)



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- PPE

5.3 Employee Exposures

5.3.1 Employee exposures to hazardous substances and health hazards:

- a) Shall in all instances be kept below PELs.
- b) Shall be kept below the TLV when there is no assigned PEL or when an assigned TLV is more protective than the PEL.
- c) Shall have occupational exposure limit consistent with the best available data established by the Industrial Hygienist when there is no assigned PEL or TLV or when data indicates a particular TLV limit is either inadequate or not feasibly attainable.
- d) Shall be kept to as low as reasonable achievable levels when they are regulated carcinogens.

5.4 IH Sampling

5.4.1 IH sampling shall be performed whenever it is reasonable to suspect that employees may be exposed to physical agents or concentrations of airborne contaminants in excess of the Action Level (generally set at half the TLV or PEL, whichever is less).

- a) IH Sampling will be performed in accordance with the applicable OSHA, NIOSH, ACGIH or other applicable standard setting bodies.

5.5 IH Program Standards

5.5.1 The IH Program shall:

- a) Maintain the highest level of integrity and professional competence, as established in the American Board of Industrial Hygiene, American Conference of Industrial Hygienists (ACGIH), Academy of Industrial Hygiene, and American Industrial Hygiene Association (AIHA) jointly shared "Code of Ethics."



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5.6 Initial (or Baseline) Surveys

- 5.6.1 Initial (or baseline) surveys shall be conducted of all work areas or operations to identify and evaluate potential worker health risks.
- 5.6.2 The Industrial Hygiene Plan Manager (or designee) shall document initial (baseline) and periodic evaluations of all work locations for the purposes of anticipating, identifying, evaluating, and controlling occupational health hazards. Such evaluations should be comprehensive, documented, and should:
- a) Describe the work or task performed.
  - b) Identify the potentially exposed workers.
  - c) Identify and describe potential sources of hazardous agents.
  - d) Evaluate the controls used to prevent or minimize exposure.
  - e) Assess the level(s) of exposure.
  - f) Include a conclusion, with rationale, whether the identified agent(s), their use(s), and the potential exposures they cause pose a hazard to workers (i.e., generate a positive or negative exposure assessment).
  - g) Recommend additional controls for hazardous agents where necessary.
  - h) Recommend the scope and frequency of further exposure monitoring, as appropriate.
- 5.6.3 The first complete evaluation of each job shall be used as a baseline for comparison with the results of future evaluations and exposure monitoring. The comprehensive survey ensures all areas and operations are evaluated by the Industrial Hygiene Plan Manager (or designee) and those evaluations are documented and accessible for future use by line management and EHS Team Members. Baselines shall be updated periodically with the frequency of updates being determined by risk and variability of the job.

5.8 Periodic Reassessments

- 5.8.1 Periodic resurveys and/or exposure monitoring shall be conducted, as appropriate. The frequency with which evaluations are updated should be proportionate to the risk presented by the hazard(s), the variability of the operation, the operation frequency, and the type and dependability of the controls limiting exposures.

5.8.2 As a general rule:

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- a) Frequently changing work sites operations (e.g., construction sites, hazardous waste cleanup activities, decommissioning operations) should be evaluated as often as necessary to reliably characterize health risks.
- b) Occupied work areas initially determined to have no significant hazards (e.g., administrative offices, low-hazards facilities) should be evaluated at least once every 3 years or in accordance with applicable regulatory requirements.
- c) Unoccupied buildings should be evaluated initially and when their mission changes.

5.8.3 In addition to these periodic evaluations, additional evaluations may be performed in response to employee concerns or reported occurrences, injuries, or illnesses. A sufficient number of worksite inspections shall be conducted to determine compliance with standards and program requirements. The frequency and scope of such inspections will depend on the size, complexity, and nature of the operations of the worksite.

5.9 Exposure Assessment Documentation

5.9.1 Worker exposure assessments for environmental factors and stressors shall be documented and records maintained. The Industrial Hygiene Plan Manager shall promptly communicate the results of these exposure assessments to the workers and supervisors who perform the tasks.

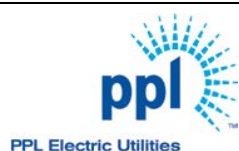
5.10 Accredited Laboratories

5.10.1 All personal samples shall be analyzed by a laboratory accredited by the AIHA for the substance class of interest (e.g., metals, organics). It is important for the Industrial Hygienist Plan Manager or designee to consult with the analytical laboratory staff. Preliminary consultation between the Industrial Hygienist Plan Manager or designee and the analytical laboratory serves a variety of purposes and can affect the quality of the analyses. Such consultation can ensure appropriate sampling and analytical techniques are used, can help with scheduling and turnaround time of analyses, can identify potential problems and special requirements, and can provide the Industrial Hygiene Plan Manager with background information for use during sampling.

5.11 Control of Carcinogens

5.12.1 The IH Program shall establish procedures to mitigate the risk of exposure from identified and potential occupational carcinogens; including the following carcinogen classifications:

- a) IARC



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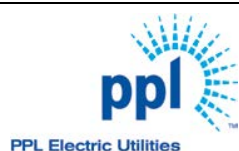
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- IARC-I (carcinogenic to humans)
  - IARC-2A (probably carcinogenic to humans)
  - IARC-28 (possibly carcinogenic to humans)
- b) NTP
- NTP-1 (known to be a carcinogen)
  - NTP-2 (reasonably anticipated to be a carcinogen)
- c) ACGIH
- A1 (confirmed human carcinogen)
  - A2 (suspected human carcinogen)
- d) OSHA
- Carcinogen

## 6.0 REFERENCES

- 6.1 29 CFR 1910 (Code of Federal Regulations), Subpart Z, "Toxic and Hazardous Substances."
- 6.2 29 CFR 1910 (Code of Federal Regulations), Subpart 1200, "Hazard Communication."
- 6.3 40 CFR 261 (Code of Federal Regulations), "Identification and Listing of Hazardous Waste"
- 6.4 49 CFR 171 (Code of Federal Regulations), "General Information, Regulations, and Definitions."
- 6.5 49 CFR 172 (Code of Federal Regulations) Subpart 101, "Hazardous Materials Table."
- 6.6 42 USC 103 (United States Code), Comprehensive Environmental Response, Compensation and Liabilities Act, Section 101(14).
- 6.7 American Conference of Governmental Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," Appendix A, "Carcinogenicity."
- 6.8 DOE (U.S. Department of Energy) *Moab UMTRA Project Industrial Hygiene Program* (DOE-EM GJ 1615), Grand Junction, Colorado, Rev1, May 2010.
- 6.9 DOE (U.S. Department of Energy) *Moab UMTRA Project Records Management Manual* (DOE-EM GJ 1545), Grand Junction, Colorado, April 2008.





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## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA 29 CFR General Industry and Construction Standards

## **8.0 TRAINING / SAFETY**

- 8.1 Safety requirements specified by process equipment manufacturers shall be adhered to even when exposures are below TLV levels.

## **9.0 COMPLIANCE AND EXCEPTIONS**

- 9.1 Follow ACGIH / OSHA, TLV and PEL levels.

## **10.0 ATTACHMENTS - N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).





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## 12.0 RECORD OF REVISIONS

<b>Rev</b>	02	<b>Date</b>	06/26/2017	<b>Rev Effective</b>	07/01/2017
<b>Prepared by:</b>	Deborah A. Sweinhart, Safety Operations				
<b>Reviewed by:</b>	Colin Brigham, President-OneSource IH, Inc.				
<b>Approved by:</b>	Scott Parker, Manager-Safety Operations				
<b>Revision Comments:</b>	Colin Brigham is a Certified Industrial Hygienist that was asked by Safety Operations to conduct a review of this procedure. Changes made by Mr. Brigham are only clarification changes and not major changes to the Industrial Hygiene Plan at PPL.				

<b>Rev</b>	01	<b>Date</b>	04/20/2015	<b>Effective</b>	08/07/2015
<b>Prepared by:</b>	Jacque Creamer, Safety Operations				
<b>Reviewed by:</b>	Safety Professionals: Brian Kostik, Richard Horan				
<b>Approved by:</b>	Brian Zickefoose, Manager-Safety Operations				
<b>Revision Comments:</b>	Reorganization of PPL / Talen initiated the revision to be made to this document. Corporate Health & Safety is no longer available to support IH functions.				

<b>Rev</b>	00	<b>Date</b>	07/25/2012	<b>Effective</b>	07/25/2012
<b>Prepared by:</b>	David Hughes				
<b>Reviewed by:</b>	Jacque Creamer, Adam Frederick, Richard Horan				
<b>Approved by:</b>	Barry Downes				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				



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**SAFETY AND HEALTH TRAINING**  
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## **SP 46 SAFETY PROCEDURE SAFETY AND HEALTH TRAINING QUALIFICATIONS**

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### **1.0 PURPOSE/SCOPE**

- 1.1 The mission of the U.S. Department of Labor's Occupational Safety & Health Administration (OSHA) is to assure the safety and health of America's workers by setting and enforcing standards and encouraging continual improvement in workplace safety and health. OSHA's regulations mandate that employees / augmented contractors are trained and qualified to perform their jobs safely. PPL Electric Utilities ensures that its employees meet these training requirements and qualifications through the **Mandated Safety Training (MST) Program**.
- 1.2 The MST Program is administered by the **Mandated Safety Training System** (MST System).
- 1.3 The MST System is a PPL database that tracks OSHA qualification requirements for each employee assigned to PPL Electric Utilities.
- 1.4 Mandated employee qualifications in the MST System include:
  - 1.4.1 Training courses
  - 1.4.2 Medical exams
  - 1.4.3 Respirator fit testing
  - 1.4.4 Task Performance Examinations (TPEs), Performance Examinations (PEs)
  - 1.4.5 Job Performance Measures (JPMs)

### **2.0 RESPONSIBILITY**

- 2.1 Technical Development Improvement (TDI)
  - 2.1.1 Identify and interpret OSHA training requirements.
  - 2.1.2 Notify management of changes and additions to mandated training.
  - 2.1.3 Assist line management in determining what MST applies to each employee.
  - 2.1.4 Along with PPL Electric Utilities management, review core training assignments every two (2) years to verify accuracy. If changes are identified, TDI managers must approve the changes before they can be applied in the MST System.
  - 2.1.5 Review and approve Mandated Safety Training courses before releasing them for training purposes.



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2.2 Supervisor / Management

- 2.2.1 Ensure that workers do not perform tasks for which they are not qualified.
- 2.2.2 Ensure assigned employees complete the assigned training or qualifications.
- 2.2.3 For PPL Electric Utilities employees, add or change individual employee task assignments in the MST System.
- 2.2.4 On an annual basis, and completed by the end of the fourth quarter, review and verify all assigned individual task assignments and make any necessary corrections.
- 2.2.5 Any PPL supervisor who engages a contractor defined as augment is responsible for the following:
  - 2.2.5.1 Identify the proper augment designation on the PAN form
  - 2.2.5.2 Ensure the appropriate job specific training is assigned and maintained in an attained status
  - 2.2.5.3 Add/remove augment contractors as needed.
  - 2.2.5.4 Ensure the augment contractor hours are entered into HRPR for tracking purposes (these hours are needed so they can be included in the OSHA Incident and DART rates).
  - 2.2.5.5 Complete any CCATS incident reports for augment contractors
  - 2.2.5.6 Complete any investigation from an incident involving an augment contractor

2.3 Technical Development and Improvement Training Department

- 2.3.1 Consult with Environmental Health & Safety and management in assigning PPL Electric Utilities employees' core and/or individual Mandated Safety Training requirements.
- 2.3.2 Maintain employees' core and assist with individual assignments in the MST System.
- 2.3.3 Develop training that meets OSHA requirements. Instruction may be computer-based (CBT), supervisor-led, or instructor-led training.
- 2.3.4 Assist managers' in scheduling mandated safety training courses.
- 2.3.5 Periodically a review and verification of all PPL Electric Utilities employee and augmented contractors training assignments will be evaluated and adjusted as per HRPR records.



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### 2.4 Health Services

- 2.4.1 Based on OSHA requirements and PPL mandated safety training, establish medical examination requirements applicable to job codes for data entry into the MST System.
- 2.4.2 Assist managers in scheduling employees for initial and periodic medical examinations.
- 2.4.3 Ensure employees' medical examination results are entered in the **Personal Qualification System (PQS)** in HRPR.
- 2.4.4 Notify employees and managers' when medical examinations are unattained, expired, or additional follow-up is required.

## 3.0 APPLICABILITY

- 3.1 This procedure ensures that employees meet OSHA training requirements and qualifications through the **Mandated Safety Training (MST) Program**.

## 4.0 TERMS AND DEFINITIONS

- 4.1 Augment contractor – A contractor that receives day to day direction from a PPL supervisor or manager.

## 5.0 MAIN BODY

### 5.1 Employees of PPL Electric Utilities

- 5.1.1 Employees' qualifications are assigned by the TDI group in the MST System either as **Core Tasks or Individual Tasks**.
  - a. Core Tasks
    - Core tasks are assigned to a particular job code.
    - All employees in the same job code are assigned the same core tasks.
    - Employees must complete these core tasks in order to be fully qualified to perform their jobs.
    - In the MST System, core tasks are automatically assigned to employees as they move from one job code to another. If an employee's job code changes, the former requirements are



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automatically deleted from the MST System and new core tasks are automatically assigned based on the new job code.

5.2 Individual Tasks

- 5.2.1 In the event that only one or more, but not all, employees in a job code require a task, those employees are assigned an individual task in the MST System (e.g., Fire Brigade, Confined Space Rescue, Asbestos Worker).
- 5.2.2 Individual task assignments will be automatically deleted from the MST System when an employee changes job codes.
- 5.2.3 Unless a change is made in HRPR-PQS, if an employee assumes a temporary assignment or moves to a temporary location, his/her core and individual tasks do not change in the MST System.
- 5.2.4 On a bi-weekly basis, the TDI Analyst will identify new job codes assigned in HRPR-PQS that do not have MST courses assigned and will enter new job codes into the MST System.
- 5.2.5 Line management and TDI will conduct interviews to identify core and individual training requirements of any new job code, which will be documented via the **Mandated Safety Medical Requirements Training Survey**.
- 5.2.6 TDI will enter core and individual requirements identified by the surveys into the MST System.
- 5.2.7 On a monthly basis, the TDI group will issue MST reports to line management. There are two types of reports:
  - a. **MST Summary Reports**
    - Routed to PPL presidents and vice presidents.
    - This report gives a summary of a group or department's attained Mandated Safety Training.
  - b. **MST Detailed Reports**
    - Routed to PPL supervisors
    - This report identifies which employees whose Mandated Safety Training is attained and unattained.



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### **5.3 Grace Periods**

5.3.1 A “grace period” is an amount of time that an employee, who is new to a position, is given to complete an assigned MST course.

5.3.2 During this time, PQS in HRPR will show the assigned training as “In Grace.”

5.3.3 If the employee completes the assigned MST training during the grace period, the employee’s training status will change from “In Grace” to “Attained,” and the grace period will end.

5.3.4 If the employee does not complete the assigned MST training during the grace period, the employee’s training status will change from “In Grace” to “Unattained”.

5.3.5 During the grace period, the employee may not perform any work that normally requires the training until the training is complete.

5.3.6 The grace period applies only to initial MST training for employees who are new to a position. It does not apply to refresher training and it does not extend the expiration period requirement for refresher training.

### **5.4 Personnel Authorized To Conduct Training**

5.4.1 Instructor-led courses may be conducted by any MCP personnel who have the appropriate knowledge, experience, technical skills, and communication skills to effectively deliver the training.

### **5.5 Recordkeeping**

5.5.1 Employee training records shall be maintained and stored in a secure location for a period of 50 years.

## **6.0 REFERENCES – N/A**

## **7.0 REGULATORY REQUIREMENTS**

7.1 OSHA’s regulations mandate that employees are trained and qualified to perform their jobs safely

## **8.0 TRAINING / SAFETY**

### **8.1 Employees of PPL Electric Utilities and Augmented Contractors**

8.1.1 An employee is considered fully qualified to perform a task when:



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- a. He/she has successfully completed and is current on all required qualifications assigned to his/her core/individual task (e.g., training courses, medical examinations, respirator fit test, re-training).
- b. If applicable, upon successful completion of the assigned core/individual tasks, he/she has successfully completed the required Performance Exams (PEs) and/or Job Performance Measures (JPMs) for the task.

NOTE: An employee must complete formal training before completing the associated PE and/or JPM.

- 8.1.2 An employee who receives on-the-job training and who, during the course of this training demonstrates the ability to perform duties safely, may perform those duties as long as the employee performs the work under the direct supervision of a fully trained, qualified employee.
- 8.1.3 In the event that an employee completes his/her formal training on a task, but has not completed the associated PE and/or JPM, the employee must perform the task under the direct supervision of a fully trained, qualified employee.
- 8.1.4 If, during the process of on-the-job training, an employee acquires the knowledge and skills equivalent to those within the formal training, the employee may waive the formal training process by completing the course written exam, PE, or JPM. The employee's supervisor must complete a **Training Equivalency Determination (TED) Form** and forward to the Technical Training group prior to permitting the employee to perform the work or task.
  - a. TDI will update HRPR-PQS to acknowledge the employee successfully attained his/her core/individual task.
  - b. A link from HRPR-PQS to the MST System will automatically change the employee's required qualification status from unattained to attained.
  - c. In this scenario, an employee may independently perform a work task as long as all of the following criteria are fully satisfied:
    - The employee possesses the knowledge and skills equivalent to the required formal training and,
    - The employee successfully completes the formal training course written exam and the associated PE/JPM, if applicable.





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- The employee's supervisor completes and forwards a TED form to the Technical Training group.

### 8.2 Contractors

8.2.1 PPL is not responsible for conducting task specific training for Contractors who are not considered augmented, but has two requirements:

#### a. Emergency and Evacuation Procedures

- Contractor company will provide training to its employees assigned to PPL, or
- PPL will appoint someone to conduct this training.

#### b. Physical Work

- PPL is responsible for informing a Contractor of any real or potential hazards as well as the appropriate OSHA regulations and compliance requirements. These hazards and OSHA requirements will be clearly outlined in PPL's contract with the respective Contractor.
- In accordance with the **Contractor Safety Procedure**, it is the Contractor's responsibility to provide its employees with the appropriate training and ensure that they are fully qualified to perform assigned tasks.

8.2.2 In some instances, (e.g., Energy Control Process Worker), PPL may choose to provide Contractors with necessary training. In this situation, training records will be maintained locally by PPL.

8.2.3 Training requirements for augment contractors include, at a minimum, the following assigned training:

- MST013 – Exposure Medical Records CBT
- SEC010 – Workplace Violence CBT
- MST251 – HazCom & Evacuation CBT

### 8.3 Safety

8.3.1 PPL EU Safety Rule Book

## 9.0 COMPLIANCE AND EXCEPTIONS – N/A




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**10.0 ATTACHMENTS - N/A**

**11.0 RECORD RETENTION**

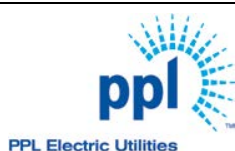
- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

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## 12.0 RECORD OF REVISIONS

<b>Rev</b>	01	<b>Date</b>	01/23/2017	<b>Effective</b>	02/21/2017
<b>Prepared by:</b>		Deborah A. Sweinhart			
<b>Reviewed by:</b>		Jared Dyer, Keri Krasley			
<b>Approved by:</b>		Brian Matweecha			
<b>Revision Comments:</b>		Included references and information pertaining to augmented contractors			

<b>Rev</b>	00	<b>Date</b>	07/31/2012	<b>Effective</b>	07/31/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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## **1.0 PURPOSE/SCOPE**

- 1.1 Provide broad direction on the procurement, training, placement, maintenance, inspections, and program evaluations of Automated External Defibrillators (AEDs) within PPL. Local procedures shall be developed using these guidelines to provide specific direction for AED implementation.

## **2.0 RESPONSIBILITY**

### **2.1 Medical Director/Staff Physician**

- 2.1.1 Recommend AED models to be used by business lines.
- 2.1.2 Determine if a physician prescription is required for recommended AED purchases.
  - 2.1.2.1 To verify whether an AED considered for purchase requires a prescription, the operating instructions of the device and or the device itself would be labeled with the statement "Caution: federal law restricts the sale of this device by or on the order of a physician." The AED activation card and website [PlusRX](#) provides the prescription for AED use.
- 2.1.3 Conduct a quality review of each occurrence, after an AED is used in a response by a company employee.
- 2.1.4 Assist Safety Operations with the review of the AED Program every other year.
- 2.1.5 Ensure the AED program complies with federal and state laws.

### **2.2 Business Line Department Management**

- 2.2.1 Submit initial AED requests to Health Services for medical director/staff physician to coordinate the decision on the type of AED to purchase.
- 2.2.2 Approve the purchase of AED based on site(s) needs.
- 2.2.3 Ensure designated employees are trained to use an AED according to this procedure.
- 2.2.4 Develop and maintain a written procedure outlining AED work instructions (refer to Section 5.1 of this procedure for details).



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2.3 Tool & Equipment Committee / Logistic Services Department

- 2.3.1 Assign a PPL catalog number (CID #) only for AEDs that are recommended /approved by the medical directors / staff Physician.
- 2.3.2 List and approve procurement of AED supplies such as batteries and pads.
- 2.3.3 Logistic Services Department must make approved AEDs available upon business line request.

2.4 Responder

- 2.4.1 Obtain and maintain qualifications necessary for using an AED.
- 2.4.2 Use AEDs in accordance with training and procedure guidelines
- 2.4.3 Granted immunity under Pennsylvania's Good Samaritan doctrine.

Note: Any person who, in good faith, acquires and maintains an AED or uses an AED in an emergency shall not be liable for any civil damages as a result of any acts or omissions by an individual using the AED. An exception exists in the event of acts or omissions intentionally designed to harm or if any grossly negligent acts or omissions result in harm to the individual receiving the AED treatment.

2.5 Training Group

- 2.5.1 Enter course results into the appropriate tracking system.
- 2.5.2 Make AED qualification courses available.

2.6 Health Services

- 2.6.1 Work with medical director to evaluate data after and AED is uses in response to an emergency.
- 2.6.2 Assist safety operations with audit reviews every other year.
- 2.6.3 Retain a list of all business line AED locations, model, and responsible manager.

2.7 Safety Operations

- 2.7.1 Implement the AED Quality Assurance Program.
- 2.7.2 Work with health services and business lines to conduct audits every other year to ensure compliance with the AED program.



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### **3.0 APPLICABILITY**

- 3.1 This procedure applies to all AED's located at all PPL facilities.

### **4.0 TERMS AND DEFINITIONS**

- 4.1. AED – Automated External Defibrillator – A portable device that uses electric shock to restore a stable heart rhythm to an individual experiencing cardiac arrest.
- 4.2. Emergency - A situation during which an individual is believed to be suffering from cardiac arrest or is in need of immediate medical attention to prevent death or serious injury.
- 4.3. Good Faith - A concept that applies when the immediacy of the situation is such that the use of an AED should not be postponed until emergency medical services personnel arrive or the person is hospitalized.
- 4.4. Responder – An individual qualified in CPR, the treatment of blood borne pathogens and the use of and AED.

### **5.0 MAIN BODY**

- 5.1 Business line department management is responsible to follow all steps below:

#### **5.1.1 Procurement**

- a. Unless the AED is already approved through PPL's Tool & Equipment Committee, complete and approve a Material Request form through procurement/supply chain in order to acquire a new AED.
- b. Notify Health Services of AED location and model used.
- c. When received:
  - Ensure AED units are registered with the manufacturer to help ensure information is received regarding updates and recalls.
  - Adequate means for downloading data from the AED's must be purchased and the systems must be maintained on site by the responsible department.

#### **5.1.2 Written Procedure**

Maintain written procedures detailing AED work instructions. Information must include:

- a. Name of Responsible Coordinator.
- b. Description of how the AED inspections will be performed documented, and who will be performing and documenting those inspections..



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- c. The locations/inventory of AEDs used at the facility.
- d. Serial number of each unit (in the area of your responsibility) along with documentation that the latest software updates and recalls has been applied.
- e. List of individuals who have been trained and are deemed qualified as responders, as well as their training status.
- g. Provide manufacturer's manual for the inspection and replacement of battery and pads.
- h. Communication plan to all employees on the use of an AED.
- i. Instructions on how to use Attachment A (AED Data Transmittal Form) and how to download usage data to Health Services.

**5.1.3 Training**

- a. Designate employees to qualify as responders for operation of AEDs by ensuring the job or work activity is entered into the appropriate HRPR training qualification tracking system.
- b. Ensure responders are scheduled for training.
- c. Training completion is entered into the appropriate tracking system by the responsible training organization.

**5.1.4 Placement of AEDs**

AEDs should be installed and located in a convenient location for use. Units are typically installed within three to five minutes in areas adjacent (but not limited) to:

- a. Work involving an increased risk of cardiac arrest, such as electrical work locations and confined space entry.
- b. Areas in which many people work closely together, such as office buildings, near elevators, cafeterias, main reception areas, or on walls in main corridors.
- c. Place signs at each AED location.

**5.1.5 Maintenance and Inspection**

Follow the AED manufacturer's recommendations for maintenance and inspections.

Inspection process will include, at a minimum:

- a. Looking for signs of physical damage. Ensuring the AED is in clean/good condition.
- b. The self-test reading displayed by the unit indicates it is "OK" or in passing status. AEDs automatically perform self-tests for proper battery charge and shock capability. If the self-test fails, then the units will typically display an error or failing message.
- c. The electrodes (pads) in the unit are not expired. Pads are typically marked with an expiration date.





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Remove AED from service when:

- a. Self-test display indicates failing or not "OK."
- b. Unit appears to be damaged.
- c. Pads are expired.
- d. A manufacturer-recommended update or recall has not been applied.

**5.2 Program Evaluation**

5.2.1 When an AED is used in response to an emergency, the data will be sent to Health Services according to local procedure. The medical director evaluates data and makes appropriate recommendations. Data is retained by Health Services.

5.2.2 Safety Operation conducts audits on every other year that a program evaluation is not completed. The audit is conducted to ensure compliance with this procedure. Audit results are submitted to the Manager-Safety Operations for action as needed.

5.2.3 All evaluation documentation is retained by Health Services.

**6.0 REFERENCES**

- 6.1 Good Samaritan Doctrine.
- 6.2 PA. Cons. Stat. Ann. Tit. 42 §8331 (1978)(Gen. Stat.)(Amended 2000 for AED user immunity).
- 6.3 PA. Emergency Medical Services Act Title 35 Chapter 37A Part 6921 through Part 6938.
- 6.4 American College of Occupational & Environmental Medicine Guidelines for the use of AEDs.
- 6.5 American Heart Association Guidelines for the use of AEDs.
- 6.6 American Red Cross Guidelines for the use of AEDs.
- 6.7 Specific AED manufacturer guidelines for use and maintenance of AEDs.
- 6.8 Quality Assurance for Automated External Defibrillation AEDs by The Eastern PA I. Emergency Medical Services Council.



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## **7.0 REGULATORY REQUIREMENTS**

- 7.1 FDA 21 C.F.R. § 801.109(b)(1).
- 7.2 42 Pa C.S.A. § 8331.2, § 8331.2. Good Samaritan civil immunity for use of automated external defibrillator (9/2/2012).

## **8.0 TRAINING/SAFETY**

- 8.1 Training
  - 8.1.1 Responders must complete CPR, AED and Bloodborne Pathogen courses.
  - 8.1.2 Re-training period will be established according to the courses provided by the applicable training organization.
  - 8.1.3 Notification is provided to local management on the qualification status of designated responders.

## **9.0 COMPLIANCE & EXCEPTIONS – N/A**

## **10.0 ATTACHMENT**

- 10.1 Attachment A: AED Transmittal Form.

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



**SP 47**  
**SAFETY PROCEDURE**  
**AED (Automated External Defibrillators)**

0000-000-PR-8042  
Custom ID: SP 47  
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## 12.0 RECORD OF REVISIONS

<b>Rev</b>	02	<b>Date</b>	07/26/2017	<b>Effective</b>	07/26/2017
<b>Prepared by:</b>	Deborah A. Sweinhart, Safety Operations				
<b>Reviewed by:</b>	Safety Professionals: Brian Kostik, Jared Dyer, Elizabeth McKay, Dalton Shorts, and Steve Mondschein				
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations				
<b>Revision Comments:</b>	Changes made in accordance with file retention procedures.				

<b>Rev</b>	01	<b>Date</b>	03/31/2016	<b>Effective</b>	04/01/2016
<b>Prepared by:</b>	Deborah A. Sweinhart, Safety & Health				
<b>Reviewed by:</b>	Safety Professionals, Brian Kostik, Richard Horan, Jeff Monsell, and Steve Mondschein				
<b>Approved by:</b>	Scott Parker, EU Safety Manager				
<b>Revision Comments:</b>	Changes made in accordance with 2015 state and federal guidelines.				

<b>Rev</b>	00	<b>Date</b>	07/18/2012	<b>Effective</b>	07/18/2012
<b>Prepared by:</b>	David Hughes, Safety & Health				
<b>Reviewed by:</b>	Safety Professionals, Jacque Creamer, Adam Frederick, Richard Horan				
<b>Approved by:</b>	Barry Downes, EU Safety Manager				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				



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**ATTACHMENT A - AED DATA TRANSMITTAL FORM**

**AED DATA TRANSMITTAL FORM**

Date: \_\_\_\_\_

Time of Occurrence: \_\_\_\_\_

Time of AED Application: \_\_\_\_\_

Number of Shock Advised: \_\_\_\_\_ Number of Shocks delivered: \_\_\_\_\_

**CPR-**

Bystander CPR? YES \_\_\_\_\_ NO \_\_\_\_\_

Total Minutes of CPR prior to AED application: \_\_\_\_\_

**Pulses-**

Regained at any time? YES \_\_\_\_\_ NO \_\_\_\_\_

\* Present at BLS team arrival? YES \_\_\_\_\_ NO \_\_\_\_\_

\*\* Present at ALS team arrival? YES \_\_\_\_\_ NO \_\_\_\_\_

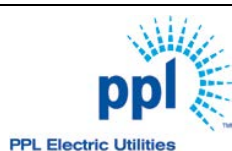
Destination Hospital: \_\_\_\_\_

**QA GUIDELINES FOR AED USE**

1. Every AED call will be reviewed by Medical Director (MD) within 24 hours of the call.
2. MD will critique the report for QA deviations as set forth by the Eastern PA EMS Council in the informational packet titled, 'Quality Assurance for Automated External Defibrillation (AED).'
3. Remediation will be documented if necessary.

\*Basic Life Support

\*\*Advanced Life Support



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**SAFETY PROCEDURE**  
**HEXAVALENT CHROMIUM**

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<b>11.0</b>	<b>RECORDS RETENTION</b>	<b>12</b>
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## **1.0 PURPOSE/ SCOPE**

- 1.1 This program is developed to assure occupational health protection for employees from exposures to hexavalent chromium primarily associated with welding and certain cutting processes involving steel containing chromium greater than 1% (e.g., stainless steel).

## **2.0 RESPONSIBILITY**

### **2.1 Management**

Responsible for following this procedure with emphasis on:

- 2.1.1 Completion of [Form 5127 - Welding Employee Documentation Form](#) where implemented by local hexavalent chromium plan
- 2.1.2 Providing ventilation to reduce employee exposures to fumes
- 2.1.3 Supporting employee industrial hygiene exposure monitoring
- 2.1.4 Establishing regulated areas as appropriate (Class 3 work)
- 2.1.5 Assuring that employees are appropriately trained

### **2.2 Safety Operations**

- 2.2.1 Conduct and oversee monitoring to evaluate employees' exposures to hexavalent chromium as required.
- 2.2.2 Provide consultation and guidance on issues concerning hexavalent chromium. Provide relevant program information to the doctor as required in the section on medical surveillance.
- 2.2.3 Work with Health Services in assessing the status of need for medicals annually.

- 2.3 Outside contractors are required to follow their own procedures to meet the requirements of OSHA 1910.1026 Chromium (VI).

## **3.0 APPLICABILITY**

- 3.1 This procedure assures occupational health protection for employees from exposures to hexavalent chromium primarily associated with welding and certain cutting processes involving steel containing chromium greater than 1%.



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### 4.0 TERMS AND DEFINITIONS

- 4.1 **Action level** is 2.5 micrograms per cubic meter of air ( $2.5 \mu\text{g}/\text{m}^3$ , 8 hour time weighted average TWA).
- 4.2 **Class 1, 2, and 3 Projects** at PPL are categories of hexavalent chromium exposure potential based on the type of work, conditions, degree of ventilation, and employee monitoring experience. See Appendix A.
- 4.3 **Exhaust and/or ventilation** is the application of welding "smoke eaters" and/or other exhaust equipment that effectively removes visible fumes generated by welding and cutting operations to render employee exposures to less than  $2.5 \mu\text{g}/\text{m}^3$  hexavalent chromium. HEPA air filtration may be required to control airborne hexavalent chromium in air returned to the workspace.
- 4.4 **Permissible exposure limit (PEL)** is an airborne concentration of 5 micrograms per cubic meter of air ( $5 \mu\text{g}/\text{m}^3$ ), calculated as an 8 hour time weighted average (TWA).
- 4.5 **Physician or other licensed health care professional [PLHCP, OSHA designation]** is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by paragraph (k) of the OSHA regulation. For simplicity, the general safety procedure uses the term "**physician**" in place of PLHCP.
- 4.6 **Regulated area** means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of hexavalent chromium exceeds, or can reasonably be expected to exceed, the permissible exposure limit (PEL).

### 5.0 MAIN BODY

#### 5.1 PROCEDURE

- 5.1.1 Background: Procedures for the completion of forms, the need for air monitoring, respirator selection and regulated area status are driven by the type of welding/cutting tasks to be done and the type of ventilation to be applied when doing those tasks. For this reason, the procedures are provided in the form of the Hexavalent Chromium Procedures table that is Attachment A of this document.

OSHA requires that employees who are exposed for 30 or more days per year above the action level be given an annual hexavalent medical exam. INDUSTRIAL HYGIENE air monitoring is required to be repeated every six months for employees exposed over the action level. In order to meet these requirements, affected locations/line management must establish a



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method to track hexavalent chromium exposure jobs. [Form 5127 - Welding Employee Documentation Form](#) is established to accomplish this.

5.1.2 [Form 5127 - Welding Employee Documentation Form](#) is established to assure continued compliance with the hexavalent chromium regulation through identifying potential hexavalent chromium exposure tasks, counting employee exposure days, and facilitation of representative INDUSTRIAL HYGIENE monitoring to assess exposure levels.

5.1.3 Instructions for [Form 5127 - Welding Employee Documentation Form](#).

a) Applicable tasks include:

- Welding stainless steel using SMAW, GMAW, FCAW
- SMAW on steel containing 1% and greater chromium
- Plasma arc or torch cutting, or air arc cutting on stainless steel and chrome alloy carbon steel with chromium content 1% and greater

b) When work order requests are received that involve work crew performing the above referenced tasks, contact the local EHSS in advance to discuss the need for air monitoring and arrangements that may be required to characterize employee exposures to hexavalent chromium.

Air monitoring is required to be conducted every six months (based on employee monitoring results as of November 2007). Safety Operations will make a determination regarding the need and method for conducting the personal exposure monitoring. If monitoring is not required, indicate this as reason for not monitoring in Section 7 of the form.

Safety Operations may set up pre-calibrated air sampling pumps with filters ready to go. Follow the instructions provided to place the pumps on applicable employees. IMPORTANT: Upon completion of the monitoring, contact the local EHS Specialist. Establish a method of securing the pumps/sample filters with the EHS Specialist to maintain their integrity. The samples must be analyzed immediately otherwise they will not meet OSHA regulatory requirements and will be useless.

At the completion of the job, send [Form 5127 - Welding Employee Documentation Form](#) to PPL Electric Utilities Manager – Environmental, Health, and Safety.

c) Questions or Comments – Discuss them with your local Safety Professional.





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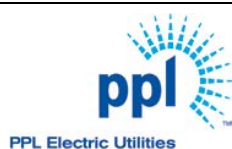
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5.1.3 Alternate tracking method to [Form 5127 - Welding Employee Documentation Form](#)

Locations where there is potential exposure to hexavalent chromium must track potential employee exposure days and conduct representative employee exposure monitoring every six months. The location is responsible for establishing a written procedure to meet this requirement.

5.2 **EXPOSURE MONITORING** – See Table 6 for Class 1, 2 and 3 Requirements

- 5.2.1 Safety Operations will conduct and oversee monitoring to evaluate employees' exposures to hexavalent chromium as required.
- 5.2.2 Monitoring shall be conducted by persons who have demonstrated knowledge and skills to meet OSHA monitoring methods, and shall be under the ultimate direction of and review by a certified industrial hygienist. Supervisors and others may deploy calibrated monitoring equipment and document essential monitoring parameters (time pumps on and off, conditions, etc.).
- 5.2.3 Monitoring should be conducted for the full work shift where feasible. The monitoring record should indicate employee activities for the balance of time not included within the actual air sampling time. [Form 5097 - IH Monitoring Data Sheet - Welding Chrome VI](#) is provided as a job aid to record pertinent information on the job site. Final record shall be created in the Open Range Comprehensive Tracking System (CTS).
- 5.2.4 When employee exposure monitoring reveals hexavalent chromium exposures above the PEL of 5  $\mu\text{g}/\text{m}^3$  (microns per cubic meter), monitoring must be repeated every three months; when over the action level of 2.5  $\mu\text{g}/\text{m}^3$ , monitoring must be done at least every six months.
- 5.2.5 Additional monitoring must be conducted when there has been any change in the production process, raw materials, equipment, work practices, or control methods that may result in new or additional exposures to hexavalent chromium.
- 5.2.6 Employees must be notified within 15 days upon receipt of the laboratory results. Results must be posted to inform all affected employees. PPL standard notification letters shall be used to transmit the results to individuals. When results exceed the PEL of 5  $\mu\text{g}/\text{m}^3$ , the letter must indicate the corrective action(s) being taken to reduce employee exposure to below the acceptable limit.
- 5.2.7 All employee monitoring samples for hexavalent chromium must be analyzed by an AINDUSTRIAL HYGIENEA certified laboratory.



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**5.3 REGULATED AREAS** – Applies to Class 3 Projects (See Attachment A)

- 5.3.1 Must be established when employee exposures are expected to be in excess of the PEL of 5  $\mu\text{g}/\text{m}^3$ . Regulated areas may be defined areas and/or job tasks. For this discussion the term regulated area will include regulated jobs and tasks.
- 5.3.2 The potential for regulated tasks/areas include the following when effective exhaust ventilation is NOT applied:
  - a) Welding stainless steel using SMAW, GMAW, FCAW
  - b) SMAW on steel containing 1% and greater chromium
  - c) Plasma arc or torch cutting, or air arc cutting on stainless steel and chrome alloy carbon steel with chromium content 1% and greater
- 5.3.3 Access to regulated areas is limited to authorized persons who have met the following qualifications:
  - a) Hexavalent Chromium Medical Clearance - **MED 132** for employees exposed 30 or more days per year.
  - b) Medical Respirator Clearance - MED 100
  - c) Respirator Program Training - MST 440
  - d) Respirator Fit Test - MST as appropriate for the respirator to be used
  - e) Hexavalent Chromium Training (MST 987)
- 5.3.4 Form 4171 Regulated Area Entry Log shall be maintained for all employees who enter the regulated area and, upon completion, sent to EHSS.
- 5.3.5 Demarcation - Regulated areas must be posted at their perimeter in order to adequately alert employees at the boundaries of the regulated area.



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- a) All entrances to areas and spaces defined as regulated areas/tasks shall be posted with the following information. Attachment B may be printed and used for this purpose.

DANGER:  
HEXAVALENT CHROMIUM  
CANCER HAZARD  
AUTHORIZED PERSONNEL ONLY  
Complete Form 4171 prior to entry  
NO SMOKING OR EATING  
RESPIRATOR REQUIRED

- 5.3.6 Employees may not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas, or in areas where skin or eye contact with hexavalent chromium occurs; or carry the products associated with these activities, or store such products in these areas.

5.3.7 Respiratory Protection

- a) Appendix A provides guideline for respirator selection. This guide based on best available monitoring information at the time of preparing this general safety procedure and may be revised as additional monitoring is conducted.

5.3.8 Hygiene Areas and Practices

- a) Lunchroom or break time areas may not be located within regulated areas or in the immediate vicinity of regulated areas.
- b) Employees working in regulated areas shall wash their hands and face at the end of the work shift and prior to eating, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet.

- 5.3.9 Employee exposure MONITORING of regulated areas must be conducted on representative jobs/tasks every three months.

5.4 **MEDICAL SURVEILLANCE**

NOTE: Current employee exposure data based on INDUSTRIAL HYGIENE Monitoring and work records demonstrate that medical surveillance is not required. EHS is responsible for assessing the status of need for medicals annually.

- 5.4.1 When conducted, all medical examinations and procedures must be performed by or under the supervision of a Physician or other licensed health care professional.

- 5.4.2 Medical surveillance must be available to all employees who are:



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- a) Exposed to *hexavalent chromium* at or above the action (2.5 ug/m<sup>3</sup>) level for 30 or more days a year
- b) Exposed to *hexavalent chromium* and experiencing signs or symptoms of the adverse health effects associated with *hexavalent chromium* exposure

5.4.3 Frequency of surveillance

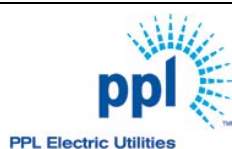
- a) Medical examinations must be done within 30 days after initial assignment to continuous regulated areas.
- b) Annually
- c) Within 30 days after a Physician's written medical opinion recommends an additional examination
- d) Whenever an employee shows signs or symptoms of the adverse health effects associated with hexavalent chromium exposure.
- e) Within 30 days after exposure during an emergency which results in an uncontrolled release of hexavalent chromium; or
- f) At the termination of employment, unless the last examination that satisfied the OSHA medical requirements was less than six months prior to the date of termination.

5.4.4 Contents of examination

- a) A medical and work history questionnaire
- b) Physical exam including skin (waist up)
- c) Blood pressure, pulse, respirations
- d) EKG (if 40 or older, with interpretation)
- e) Chest X-Ray
- f) Pulmonary function
- g) CBC with differential & Platelet count (NOTE: 4 hour fasting required)
- h) Blood chemistry

5.4.5 Information provided to the Physician

- a) Copy of this standard (1910.1026 Chromium (VI))



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- b) Description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to hexavalent chromium
  - c) The employee's former, current, and anticipated levels of occupational exposure to hexavalent chromium
  - d) A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used that equipment
  - e) Information from records of employment-related medical examinations previously provided to the affected employee, currently within the control of the employer
- 5.5 The employer shall obtain a written medical opinion from the physician, within 30 days for each medical examination performed on each employee, which contains:
- 5.5.1 The physician's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to hexavalent chromium
  - 5.5.2 Any recommended limitations upon the employee's exposure to hexavalent chromium or upon the use of personal protective equipment such as respirators
  - 5.5.3 A statement that the physician has explained to the employee the results of the medical examination, including any medical conditions related to hexavalent chromium exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment
- 5.6 The employer shall provide a copy of the physician's written medical opinion to the examined employee within two weeks after receiving it.
- 5.7 **COMMUNICATION OF HEXAVALENT CHROMIUM HAZARDS**
- 5.7.1 Hexavalent Chromium Training [MST992 - Hexavalent Chromium Update CBT](#) must be completed before employees are assigned potential hexavalent chromium work tasks. Applicable work tasks include Class 2 and Class 3 work done by welders, helpers, and others as appropriate.
    - a) Consistent with the OSHA regulation, the training includes:
      - An assessment of the hazards of *hexavalent chromium* and the operations which have been found to result in exposures



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- The purpose and description of the hexavalent chromium medical surveillance program
- Engineering controls to reduce hexavalent chromium exposures
- A review of the OSHA Hexavalent Chromium standard
- Contents of this Procedure on hexavalent chromium

5.7.2 Test questions shall be given to ensure that each employee can demonstrate knowledge of at least the following:

- a) Contents of this Safety Procedure
- b) Purpose and a description of the hexavalent chromium medical surveillance program
- c) Information on how employees can obtain a copy of the OSHA Hexavalent Chromium standard (1910.1026) from PPL

5.7.3 The following related MST course must also be completed:

- a) PPL [MST290 - Hazard Communication CBT](#)

**5.8 RECORDKEEPING**

5.8.1 Safety Operations shall maintain documentation regarding all air monitoring conducted to comply with the requirements and regulation, including:

- a) Date of measurement for each sample taken
- b) Operation involving exposure to *hexavalent chromium* that is being monitored
- c) Sampling and analytical methods used and evidence of their accuracy
- d) Number, duration, and the results of samples taken
- e) Type of personal protective equipment, such as respirators worn
- f) Name, employee number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored
- g) The results of the monitoring in comparison to occupational exposure limits
- h) Communication of the results to affected employees.



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- 5.8.2 Employee air monitoring records shall be available to employees and others consistent with 29 CFR 1910.1020.
- 5.8.3 Health Services shall maintain records of all medical exams conducted to comply with the requirements the regulation, including:
  - a) Name and social security number
  - b) Copy of the Physician's written opinions
  - c) Copy of the information provided to the Physician
- 5.8.4 Employee medical records shall be maintained and made available in accordance with 29 CFR 1910.1020.

## **6.0 REFERENCES**

- 6.1 OSHA 1910.1026 Chromium (VI) also known as Hexavalent Chromium.

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA 29 CFR 1910.1020.
- 7.2 OSHA 1910.1026

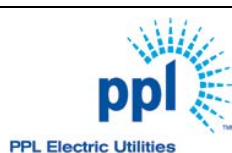
## **8.0 TRAINING / SAFETY**

- 8.1 PPL EU Safety Rule Book
- 8.2 [MST992 - Hexavalent Chromium Update CBT](#) must be completed before employees are assigned potential hexavalent chromium work tasks
- 8.3 [MST440 - Respiratory Protection CBT](#), including fit testing of a respirator.
- 8.5 [MST290 - Hazard Communication CBT](#)

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

## **10.0 ATTACHMENTS**

- 10.1 Attachment A - Hexavalent Chromium Procedures Table
- 10.2 Attachment B - Hexavalent Chromium Regulated Area Posting



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- 10.3 Link - [Form 5127 - Welding Employee Documentation Form](#)
- 10.4 Link - [Form 5097 - IH Monitoring Data Sheet - Welding - Chrome VI](#)
- 10.5 Link - [Form 4171 - Regulated Area Entry Log](#)

## 11.0 RECORDS RETENTION


- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	05/22/2017	Effective	5/22/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure compliance with OSHA requirements. Also, ensured all links to documents are working properly.			

Rev	00	Date	08/09/2012	Effective	08/09/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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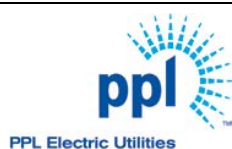
## ATTACHMENT A - Hexavalent Chromium Procedure Table

FORM 5127 Welding Employee Documentation Form

\*\* While normally not needed and normally not required, conditions that allow the buildup of welding fumes whether or not they contain hexavalent chromium may cause the need for exhaust ventilation and/or respiratory protection. Consult a Safety and INDUSTRIAL HYGIENE specialist as appropriate.

\*\*\* High volume/local exhaust system at the 2007 Montour March and Brunner Island September outages or equivalent local point source exhausts ventilation.

CLASS	Tasks	Ventilation	Completion of FORM 5127* (or equivalent method)	INDUSTRIAL HYGIENE Monitoring Requirement See Section 7	Regulated Area Status	Respirator Selection
<b>CLASS 1</b>	Welding, cutting, and burning on carbon steel with less than 1% chromium  TIG welding on stainless steel  Mechanical cutting and grinding on steel with 1% and greater chromium content	Not normally needed**	Not required	Periodic monitoring for welding in general (without regard to chromium) is indicated  Consult Safety and INDUSTRIAL HYGIENE Specialist	Not a Regulated Area	Respirator Not Required**
<b>CLASS 2</b>	Welding stainless steel using SMAW, GMAW, FCAW  SMAW on steel containing 1% and greater chromium  Plasma arc or torch cutting, or air arc cutting on stainless steel and chrome alloy carbon steel with chromium content 1% and greater	Use of effective ventilation captures or prevents employee exposure to nearly all visible fumes  Large Spaces with good general ventilation and intermittent hot work tasks during the full shift  During boiler outages, use exhaust ventilation system***	Complete Form 5127 (or equivalent method) and send information to Safety Ops-WALO	Representative employee monitoring every six months at each affected site	Not a Regulated Area	Respirator Not Required**
<b>CLASS 3</b>	Welding stainless steel using SMAW, GMAW, FCAW  SMAW on steel containing 1% and greater chromium  Plasma arc or torch cutting, or air arc cutting on stainless steel and chrome alloy carbon steel with chromium content 1% and greater	Spaces with limited ventilation where welding/cutting fumes may become concentrated Examples: Moisture separator replacement Boiler drums Main boiler when applying overlay to tube bundles without effective ventilation.	Complete form (or equivalent) and send information to Safety Ops-WALO	Comprehensive employee monitoring required to characterize exposures from initial startup date of work project  Consult corporate industrial hygienist (CINDUSTRIAL HYGIENE) to develop monitoring plan	Regulated Area See Section 8	Respirator with P100 filters  Consult corporate industrial hygienist on case by case basis



**SP 48  
SAFETY PROCEDURE  
HEXAVALENT CHROMIUM**

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**ATTACHMENT B - Hexavalent Chromium Regulated Area Posting -- Class 3  
Projects**

**DANGER:**

**HEXAVALENT CHROMIUM**


**CANCER HAZARD**

**AUTHORIZED PERSONNEL ONLY**

**Complete Form 4171 prior to entry**

**NO SMOKING OR EATING**

**--RESPIRATOR REQUIRED--**

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## **SP 49 SAFETY PROCEDURE PROCEDURE ADHERENCE**

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### **1.0 PURPOSE/SCOPE**

- 1.1 This procedure outlines the roles and responsibilities that all employees must follow to ensure a safe working environment at PPL.

PPL's Safety Policy:

- 1.1.1 *The safety of our people is a major corporate priority.*

*No job we do or service we perform is so urgent that we cannot take the time and use the necessary equipment to do it safely.*

*The line organization provides the leadership, direction and the equipment to accomplish the job safely and efficiently. Each employee must assume the responsibility for his or her own actions consistent with established safety rules.*

### **2.0 RESPONSIBILITY**

#### **2.1 Management**

- 2.1.1 Provide the necessary oversight to ensure full compliance with this procedure and associated safety rules and regulations.
- 2.1.2 Provide the necessary resources (time and financial) to enable employees to achieve the vision of an accident/injury free work environment.
- 2.1.3 Lead the organization by example and hold all employees accountable for their actions and for procedural adherence. This means a "zero tolerance" attitude for violations of safety procedures and rules, unsafe conditions and unsafe work practices, and the acceptance of nothing less than excellence in safety.
- 2.1.4 Provide a place of employment that is free of recognized hazards that cause or are likely to cause death or physical harm to employees.

#### **2.2 Individual Employees**

- 2.2.1 All employees are responsible for creating a safe work environment and for modeling safe behaviors for peers.



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- 2.2.2 All employees are expected to exhibit good judgment and generally accepted standards of behavior, written or unwritten; regardless of associated accountability consequences.
- 2.2.3 Employees are expected to comply with PPL EU Safety Rules, Procedures, Work Methods, established standards and fundamentals related to industrial safety.
- 2.2.4 Employees must immediately warn others if they witness unsafe behaviors and take the necessary actions to stop the activity.
- 2.2.5 Employees are expected to report all injuries, near miss events and identified hazards to their supervision.
- 2.2.6 Employees are expected to use Human Performance Tools to minimize exposure from hazards and event precursors.
- 2.2.7 Employees will support accident, injury, and near miss investigations.
- 2.2.8 Employees are expected to conduct peer coaching to promote reinforcing safe behaviors among team members. Giving and receiving coaching is a free gift intended to help us improve as a team.
- 2.2.9 Individuals are personally responsible for creating a safe work environment and adopting a personal 'zero tolerance' attitude in regard to identified unsafe conditions and unsafe work practices.
- 2.2.10 Employees must be intolerant of unsafe conditions and practices whether within or outside of their work groups and willingly speak up whenever and wherever safety concerns appear.
- 2.3 Supervisor
  - 2.3.1 Supervisors must take ownership for safety within their work group and for modeling the behaviors they expect from others.
  - 2.3.2 Supervisors shall ensure all employees have the training (qualifications), tools and equipment needed to perform job tasks safely.
  - 2.3.3 Supervisors are expected to observe work processes and ensure that tasks are executed properly and to intervene if necessary to reinforce safe behaviors.



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- 2.3.4 Supervisors are expected to coach employees regarding any deficiency in use of Personal Protective Equipment (PPE), lapse in meeting standard or fundamental or failure to use Human Performance tools.
- 2.3.5 Supervisors should use observation data to determine at-risk behaviors to assist in changing the potentially unsafe behaviors of the team.
- 2.3.6 Supervisors should recognize and appropriately reward safety excellence.
- 2.4 Safety Operations
  - 2.4.1 Inform and assist line management in the development and implementation of appropriate safety programs.
  - 2.4.2 Provide technical support and interpretation of safety and health standards, rules and regulations and advising supervision on safety matters affecting personnel.
  - 2.4.3 Monitor federal, state and local regulations that may impact the development or modification of safety rules and identifying such changes to appropriate safety procedures/rules.
- 2.5 Health Services
  - 2.5.1 Responsible for overseeing that adequate/appropriate medical treatment is provided to employees and effective injury/illness case management.

### **3.0 APPLICABILITY**

- 3.1 The Safety and Health Program is applicable to all personnel assigned to work for PPL Electric Utilities

### **4.0 TERMS AND DEFINITIONS – N/A**



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## **5.0 MAIN BODY**

- 5.1 Safety is our number one priority and must be held as an uncompromising value in all that we do. Work Practices in our daily lives must consistently demonstrate that safety and top performance go hand-in-hand. Leadership, personal accountability and teamwork are the keys to success.
- 5.2 It is essential that each of us understand and uphold the principles of our safety program and not only comply with the rules but also the “spirit” behind them.
- 5.3 It is our shared responsibility to look out for our own well being and to warn each other of potentially dangerous situations or behaviors. Managers and supervisors must encourage this process and practice it themselves to assure that safety is upheld.
- 5.4 Employee ownership and management oversight of industrial / personnel safety is critical to success in creating an accident/injury free work environment.
- 5.5 Safety is a commitment we make to ourselves, our families, our co-workers and the public we serve. Only by dedicating ourselves to safety can we fulfill our vision.


*ALL INJURIES ARE PREVENTABLE*

- 5.6 Safety Rules and Safety Procedures detail the safety and health requirements, processes, and expectations applicable to work at PPL Electric Utilities.
- 5.7 Performance metrics and measures
  - 5.7.1 Safety Operations team will monitor safety performance and provide statistical data.
  - 5.7.2 Safety Operations team will utilize the CCATS system to identify at-risk trends for correction.

## **6.0 REFERENCES**

- 6.1 PPL EU Safety Rule Book
- 6.2 PPL EU Safety Procedures

## **7.0 REGULATORY REQUIREMENTS – N/A**

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## 8.0 TRAINING / SAFETY – N/A

## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS – N/A

## 11.0 RECORD RETENTION

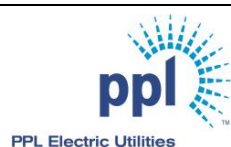
- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Pros: Steve Mondschein, Jared Dyer, Brian Kostik, Elizabeth McKay, and Dalton Shorts			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed for proper updated procedure format.			

Rev	00	Date	09/21/2012	Effective	09/21/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			





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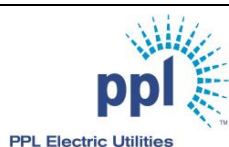
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## **1.0 PURPOSE/SCOPE**

- 1.1 Establish electrical safety requirements for work on or near exposed energized equipment. This document includes the following topics:
  - 1.1.1 Selection and use of energized vs. de-energized work methods.
  - 1.1.2 Selection, use, and maintenance of personal protective insulating materials such as rubber gloves, sleeves, overshoes, and blankets.
  - 1.1.3 Selection and use of Arc-Flash Apparel.
  - 1.1.4 Installation, removal and maintenance of temporary protective grounding equipment.

## **2.0 RESPONSIBILITY**

- 2.1 Managers are responsible to:
  - 2.1.1 Monitor the electrical safety practices of personnel under their direction.
  - 2.1.2 Assign only qualified electrical workers to perform work on or near exposed energized equipment (within the appropriate protective boundaries).
  - 2.1.3 Ensure employees receive the necessary safety and technical training to perform their assigned duties.
  - 2.1.4 Require employees to hold thorough job briefings/tailboard conferences.
  - 2.1.5 Require employees to use the correct personal protective equipment and tools.
- 2.2 Qualified Electrical Workers are responsible to:
  - 2.2.1 Use their knowledge, skills and experience to perform their job in a safe manner and follow established procedures. Conduct a thorough job briefing/tailboard conference. Use the correct PPE and tools for the job.
  - 2.2.2 Properly use and care for personal protective equipment, arc flash apparel, and test equipment.
  - 2.2.3 Tag and remove damaged equipment from service, including test equipment and personal protective equipment
  - 2.2.4 Provide and maintain sufficient access and working space around electrical equipment to permit ready and safe operation and maintenance.



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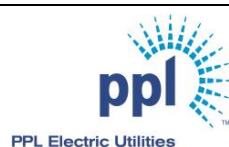
- 2.2.5 Determine the applicable safe approach distance for any given voltage.
- 2.2.6 Distinguish energized parts of electrical equipment from other parts, and know how to treat them.
- 2.2.7 Determine the nominal voltage of energized parts.
- 2.2.8 Determine the applicable safe approach distance for any given voltage.
- 2.2.9 Select and use the correct personal protective equipment for a given task, including care and inspection.
- 2.2.10 Select and apply insulating and shielding materials, and correctly use insulating tools for working on or near energized parts.
- 2.2.11 Identify the hazards of electric shock and arc-flash.
- 2.2.12 Rescue a stricken coworker in case of electrical shock.
- 2.2.13 Select and correctly apply temporary protective grounding.
- 2.2.14 Administer First Aid including CPR/AED.
- 2.3 Unqualified workers must at least be able to:
  - 2.3.1 Identify the hazards of electric shock and arc-flash.
  - 2.3.2 Distinguish energized parts of electrical equipment FRom other parts, and know how to treat them.
  - 2.3.3 Determine the applicable safe approach distance for any given voltage.

### **3.0 APPLICABILITY**

- 3.1 The requirements in this document apply to qualified electrical workers and others who are working on or near exposed energized equipment.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 **ARC-FLASH APPAREL** – Outer garments worn to cover the head, and upper and lower body for protection from arc-flash exposure while working near energized equipment. Must be flame-resistant and have an Arc Thermal Performance Value (ATPV) rating.



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- 4.2 **ATTENDANT** – The primary responsibility of an Attendant is to keep unqualified persons outside of a hazardous work area where they might be exposed to electrical shock or arc-flash. An attendant must remain on guard as long as unqualified persons have a potential exposure to these hazards. An attendant can also function as a Trained Watchperson...see 4.24.
- 4.3 **BARRICADE** – A physical obstruction, such as tapes, flagging, cones, or frames intended to provide a warning about a hazardous area and to limit access. Use barricade devices in lieu of posting an attendant.
- 4.4 **BARRIER** - A physical obstruction intended to prevent contact with exposed energized equipment or to prevent unauthorized access to a work area. (Example: voltage-rated barrier material installed to prevent access to an energized compartment).
- 4.5 **BOUNDARY** - A distance established to limit the approach to work areas having electric shock or arc-flash/flame hazards.

- 4.5.1 **FLASH PROTECTION BOUNDARY** – The flash protection boundary defines the distance where arc flash apparel is necessary to prevent a person from receiving a second-degree burn if an arc-flash would occur. Protect all body parts when entering this boundary.

The Flash Protection Boundary distances in the Attachments are the results of scientific calculations based on the short-circuit energy available if a fault occurs while performing certain tasks.

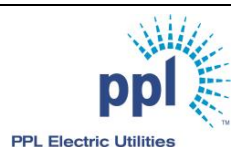
Anyone entering this boundary must wear arc flash apparel of the rating specified in Attachments B and C. Other PPE may also be required to cover the hands, face, and neck areas.

**Important Note:** PPL Facilities Management follows and trains their employees on NFPA 70E 2015. They use the term: LIMITED APPROACH BOUNDARY [4.5.2] in lieu of FLASH PROTECTION BOUNDARY [4.5.1].

- 4.5.2 **LIMITED APPROACH BOUNDARY** – Establish a limited approach boundary when a shock hazard exists because there are exposed energized parts.

Only qualified electrical workers, or unqualified persons escorted by a qualified electrical worker, may enter the limited approach boundary.

- 4.5.3 **MINIMUM APPROACH DISTANCE** – There is a greater risk of shock hazard inside of this distance. Establish a minimum approach distance to keep unqualified workers from closely approaching exposed energized parts.



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Only qualified electrical workers can cross this boundary, and doing so requires the use of shock protection techniques, special PPE and equipment.

**Important Note:** PPL Facilities Management follows and trains their employees on NFPA 70E 2015. They use the term: RESTRICTED APPROACH BOUNDARY [which is not referenced] in lieu of MINIMUM APPROACH DISTANCE [4.5.3].

- 4.6 **CORONA** - A discharge of electricity due to the ionization of air surrounding a conductor energized at very high voltage.
- 4.7 **DE-ENERGIZED** –Free from any electrical connection to a source of voltage. Free of any electrical charge. Equipment is at the same voltage as the earth (ZERO volts).
- 4.8 **DIAGNOSTIC TESTING** - Activities such as verifying voltage, verifying current, measuring resistance, and installing/removing test equipment.
- 4.9 **ELECTRICALLY SAFE WORK CONDITION** - An electrical circuit or equipment is in the Electrically Safe Work Condition (considered de-energized) after the following steps are completed:
  - 4.9.1 De-Energize the voltage source(s) and apply energy control if necessary.
  - 4.9.2 Test to verify absence of voltage.
  - 4.9.3 Evaluate the hazards involved in working on or near other exposed energized equipment.
  - 4.9.4 Use covers or barriers as practical to eliminate hazards.
  - 4.9.5 Use the recommended tools, PPE and arc-flash apparel.
  - 4.9.6 Ground the circuit/equipment as necessary.
- 4.10 **ENERGIZED WORK METHOD** - Intentionally contacting energized parts while wearing proper PPE, or while using hot-line tools.
- 4.11 **EXPOSED (live parts)** - Parts that are hazardous because they are not suitably guarded, isolated, or insulated. They can be touched inadvertently or approached at an unsafe distance.
- 4.12 **FLASH HAZARD** – A dangerous condition associated with the release of energy caused by an electric arc.
- 4.13 **FLASH SUIT** - A complete arc flash apparel system that covers the entire body, except for the hands and feet. The system includes a jacket, pants, and a



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bee-keeper-type hood fitted with a face shield. Flash suits also have a specific ATPV rating.

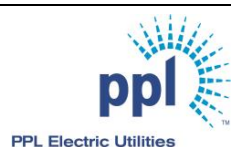
- 4.14 **GROUNDING** - Equipment is adequately connected to the earth or some other conducting body that serves as a ZERO-voltage reference in place of the earth.
- 4.15 **GUARDED** – Covers, shielding, fence, enclosure or other protection for live parts which make it unlikely that a person could make contact.
- 4.16 **INSULATED** – A dielectric material or air space that prevents an energized part from contacting other conductive surfaces.

The term “insulated” means electrically insulated (not thermal insulation). Use any insulated tool or object in accordance with the manufacturers rating and instructions.

- 4.17 **MOVABLE CONDUCTOR** – A conductor that is not rigid tied or bolted down. For example, an overhead line conductor, lead, loop, etc.
- 4.18 **QUALIFIED ELECTRICAL WORKER** - One who has skills and knowledge related to the construction and operation of certain electrical equipment and installations, and has received safety training on the hazards involved.

Note: On a task basis, an employee is either **qualified** or **unqualified** depending on the individual's training and/or work experience. For example, it is possible to be qualified with all the electrical equipment in a particular work area, and yet unqualified with a new piece of equipment.

- 4.19 **RESCUE EQUIPMENT** - Equipment placed at the work site for the sole purpose of removing a person from an energized conductor. This may include but is not limited to insulated hooks, certain hot line tools, or insulating gloves.
- 4.20 **RUBBER GOODS** - A general term used to describe, rubber insulating sleeves, gloves, overshoes, mats, blankets, line hose, etc.
- 4.21 **SHOCK HAZARD** – A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.



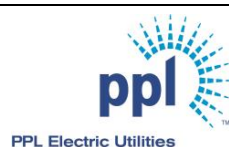
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- 4.22 **TEMPORARY PROTECTIVE GROUND** - A temporary electrical connection, between a source of voltage and the earth, for the purpose of eliminating any difference in voltage between the two. Temporary protective grounds provide these benefits:
- 4.23.1 Greatly reduced shock hazard for personnel working on de-energized lines or equipment.
  - 4.23.2 Eliminates induced or static voltage charges on lines and equipment.
  - 4.23.3 Ensures that protective devices (relays and circuit breakers or fuses) will disconnect the energized source as quickly as possible.
- 4.23 **TRAINED WATCHPERSON** - The Trained Watchperson is a qualified electrical worker who is also able to perform First Aid, Cardio Pulmonary Resuscitation (CPR), and, if available, can operate an Automatic External Defibrillator (AED). The trained watchperson can be a member of the crew, but he/she must wear the PPE appropriate to his/her proximity and function in the work activity. A trained watchperson is required when working within the Minimum approach distance above 600V.
- 4.24 **UNQUALIFIED WORKER** - A person who is not a qualified electrical worker as defined in 4.19.
- 4.25 **WHITE TAG PERMIT** – A permit utilized, as part of OI-153, on a distribution circuit to block reclosing on the first available upstream device.

## **5.0 MAIN BODY**

- 5.1 Electrical Safety and ARC-Flash Protection
- 5.1.1 Any contact with an energized component can be hazardous to your health. Report any shock or arc-flash event to your supervisor immediately, and get a medical evaluation.
  - 5.1.2 The preferred work method for equipment operating at greater than 50 volts is the Electrically Safe Work Condition (de-energized). Perform the following steps to establish an Electrically Safe Work Condition:
    - a) De-Energize the voltage source(s) and apply energy control if necessary.
    - b) Test to verify absence of voltage.
    - c) Evaluate the hazards involved in working on or near other exposed energized equipment.



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- d) Use covers or barriers as practical to eliminate hazards.
  - e) Use the recommended tools, PPE and arc-flash apparel.
  - f) Ground the circuit/equipment if necessary.
- 5.1.3 Use the Energized Work Method on circuits and equipment operating at greater than 50 volts to ground if the following conditions exist (and it is impractical to de-energized the system or equipment):
- a) De-energizing introduces additional or increased hazards.
  - b) De-energizing is not feasible or is impractical due to equipment design, operational limitations, or requirements of the work activity.
  - c) Work involves electronic equipment operating at low current (less than five milliamps) where shock is not a hazard.
  - d) Cycling of sensitive equipment could be detrimental to its reliability.
  - e) Work involves using either the rubber glove/sleeve work method or hot-line tool work method.
- 5.1.4 Unqualified workers must stay out of the Minimum approach distance for electric shock hazards.
- 5.1.5 Unqualified workers must stay out of the Flash Protection and Limited Approach Boundaries, unless a qualified electrical worker escorts them and they are wearing the appropriate arc flash apparel and PPE.
- 5.1.6 Provide isolation for work on electrical circuits in accordance with the Energy Control Process.
- 5.1.7 All energized work being performed on lines and equipment energized at 600V-15kV shall have reclosing blocked on the first available upstream device, utilizing a **White Tag Permit**.
- Note 1: Applying or removing rubber insulating material does not require a White Tag Permit.
- 5.1.8 Treat electrical equipment and lines as energized until verified to be de-energized, and if necessary, grounded.
- 5.1.9 Two or more employees must not work on different phases of energized electrical equipment at the same time when they are within arms-reach of each other. This will reduce the shock hazard.
- 5.1.10 Stand clear when opening or closing circuit breakers or disconnect devices on an energized bus. Stand on the non-hinged side of the

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cabinet, turn your head away, and look in the opposite direction of the door. This will reduce the physical hazard if the device fails.

5.1.11 Never reach blindly into areas that contain exposed energized equipment.

5.1.12 Take additional preventative measures to reduce electric shock hazards as follows:

- a) Turn off and block the power sources feeding into the work area. Lines and equipment are considered energized until they are properly blocked using the appropriate Energy Control Procedure.
- b) Use approved insulated tools rated for the voltage present.
- c) Install temporary insulating materials, rated for the voltage present, to reduce exposure to contacting energized surfaces.
- d) Install barricades, rope / tape barriers, or use an attendant to prevent unqualified workers from entering a Flash Protection or Limited Approach Boundary.

5.1.13 All activities covered by these instructions must be discussed and documented in a job brief/ tailboard conference. The hazards associated with the work and the expectations at the site determine the level of detail and method used to hold a job brief/tailboard.

5.1.14 The person-in-charge, together with all crewmembers, must conduct a revised job briefing/tailboard conference whenever:

- a) The scope of work or job plan changes or needs to change,
- b) Crew members identify new hazards or need upgraded hazard control,
- c) Other crews arrive at the job site.

5.1.15 A trained watchperson is required when a qualified electrical worker is within the minimum approach distance and is working on energized equipment above 600 volts. The duties of the trained watchperson are:

- a) Observe the work from a clear viewpoint, and be ready to perform a rescue immediately if necessary.
- b) Stage the appropriate tools and PPE required to perform a rescue. (e.g. climbing tools and rubber gloves, dielectrically tested rescue hook or hot stick to pull the victim off of energized equipment)
- c) Don the same PPE and arc-flash apparel as the worker depending on watchperson's proximity to the work.

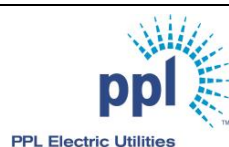


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- d) A trained watchperson can also perform the function of an attendant.
- 5.1.16 Take the following actions when working near exposed energized parts, and when working in any panel, junction or terminal box:
- a) Remove conductive articles of jewelry or clothing (or render them non-conductive) when they increase the risk of electrical contact with exposed live parts. (For example: watchbands, bracelets, rings, key chains, necklaces, watch chains, belt buckles)
  - b) Insulate adjacent equipment, as much as practical, to eliminate arc-flash and shock hazards.
  - c) Establish visible boundaries as appropriate.
  - d) Use the tools and PPE appropriate for the work task.
  - e) Secure all doors, hinged panels, and the like to prevent their swinging into an employee and knocking the employee into exposed live parts.
- 5.1.17 When working on energized 480V substation services, category 4 arc flash protection is required (Refer to Safety Rule Book Section 8, Attachment C – Arc Flash Locations) and Attachment A in the Safety Rule Book for work in station service panel board.
- 5.1.18 When working up to the MAD for 69kV – 500kV, refer to Safety Rule Book, Section 8, Attachment B and C for proper arc flash Personal Protective Equipment.
- 5.1.19 When working greater than 4 ft. 6 in. from exposed energized 69kV equipment, Category 1 arc flash protection is required; except for the peach highlighted circuits in Attachment D Category 2 arc flash is required for those circuits.
- 5.1.20 Employees working in a manhole or vault with energized electrical conductors, except when performing an inspection, shall cover the energized conductors with arc suppression blankets to suppress the arc blast/flash.

**NOTE:** Tools used during inspection shall be limited to a broom, shovel, flashlight, voltmeter, amp meter, and temperature or thermal meters.



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5.2 Shop Testing and/or Lab

- 5.2.1 The qualified electrical worker and the supervisor or instructor/subject matter expert must evaluate the hazards associated with testing in the shop and/or lab areas. Consult Safety Operations for further verification if necessary.
- 5.2.2 In work situations where there are arc-flash hazards, establish the applicable Flash Protection and Limited Approach Boundaries, and use the appropriate PPE and arc flash apparel.
- 5.2.3 Employees with implanted pacemakers, ferromagnetic medical devices or other electronic devices vital to life should seek the advice of their Physician prior to entering a high magnetic field.

5.3 Voltage Verification

**CAUTION**  
**Approach all electrical circuits as if they are energized, and wear the appropriate level of PPE until absence of voltage is confirmed.**

- 5.3.1 Use only company provided test meters or devices to detect or verify voltage.
- 5.3.2 Inspect test meters/devices and leads for damage before use.
- 5.3.3 Verify that test meters/devices are operating properly and that appropriate settings are used:
  - a) Verify that the test meters/devices have a sufficient range for the expected voltage.
  - b) Verify voltage using the AC and DC scales where the possibility exists of both voltages being present.
  - c) Test the meter/device on a known live source prior to and immediately after the voltage verification. This is a LIVE-DEAD-LIVE test.

**CAUTION**  
**DO NOT set a multi-meter to auto range while performing any "Live-Dead-Live" test.**

- 5.3.4 Use contact-type meters/devices on voltages <600 volts to verify absence of voltage prior to working on de-energized equipment.



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- a) Use non-contact voltage detectors on voltages >600 volts. When a non –contact voltage detection device is used, apply temporary grounding before working on the de-energized equipment or conductor.

5.3.5 Use test leads with insulated connectors in all possible applications.

- a) Ensure that test leads without shielded or shrouded connectors will not fall off their connection points.

**5.4 Establishing Boundaries**

5.4.1 NOTE (1): Use the most conservative of either the Flash Protection Boundary or the Limited Approach Boundary distance.

5.4.2 NOTE (2): Flash Protection Boundaries may be less than specified in Attachment B if the work area is a room, vault or manhole where the boundary size is limited by the walls.

5.4.3 When working on exposed energized equipment, alert unqualified workers of arc-flash hazards by doing at least ONE of the following:

- a) Place a barricade made of cones, flagging, banner tape or rope in conjunction with posting appropriate signs or tags to mark off the work area. Use red & black or red & white for signs, banner tape, flagging or rope.

Suggested sign wording: **DANGER DO NOT ENTER**  
**Only authorized entry is permitted**

-OR-

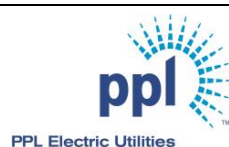
- b) Post or assign an attendant to control access to the work area.

5.4.4 Maintain the Flash Protection Boundaries at all times while there are exposed energized parts.

5.4.5 Set up a Flash Protection Boundary any time employees are working on or near exposed energized equipment and there is danger of unqualified workers contacting exposed energized parts. Refer to Safety Rule Book, Section 8 or Attachment A – System Shops Task Matrix Electric Utilities Tasks.

**5.5 Personal Protective Equipment (PPE) and Tools**

5.5.1 This section provides guidance for selecting, using, caring, and testing of electrical PPE and tools used where there are arc-flash and/or shock hazards.



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**Note: The PPE recommendations covered in this section are minimum requirements. Wear additional PPE if deemed necessary by the qualified electrical worker or by site-specific procedures or assessments.**

**5.5.2 General Requirements**

- a) Use only PPL approved rubber goods, rated for the expected voltage, in accordance with company safety procedures.
- b) **DO NOT** cut or modify rubber goods (except for voltage-rated barrier materials).
- c) Inspect all rubber goods before use.

**5.5.3 Inspection, Storage and Testing of Rubber Goods**

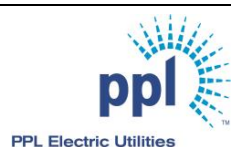
- a) **DO NOT** use rubber goods past their test due date. Remove them from service and return for test.
- b) Remove damaged rubber goods from service and return.
- c) Replace damaged leather glove protectors if they have tears, cuts, holes or have oil, grease or other substances on them.
- d) Include both exterior and interior surfaces when inspecting rubber goods. Look for the following defects:
  - Cuts, snags, cracks, punctures, burns, ozone/corona cutting or cracking, swellings, abrasions
  - Embedded foreign objects
  - Contamination from materials such as oil, grease or other damaging chemicals
  - Loss of elasticity when stretched
- e) Store rubber goods in their natural shape. Do not fold, bend, or turn them inside out. Do not expose them to sunlight, direct heat, chemicals or other harmful substances.

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#### 5.5.4 Gloves

Rubber Glove Classification and Maximum Voltage Rating	
Glove Ratings (Class)	Maximum Voltage
Class 00	< 300 Volts
Class 0	< 600 Volts
Class 2	Above 600 V - 15 KV (inclusive) Use with Rubber Sleeves when within minimum clearances.

- a) **DO NOT** mix and match rubber gloves. Keep them together as matched pairs.
- b) Air test rubber gloves before each use.  
Roll the cuff tightly toward the palm to trap air inside the glove.  
Check for punctures by either listening for escaping air or by holding the glove close to your cheek to feel the escaping air.
- c) Store rubber gloves in glove bags or other approved containers in their natural shape (with cuffs down, fingers up). If stored in a toolbox or tool bag, ensure the gloves are stored on top. **DO NOT** pile tools and other items on the gloves.
- d) Rinse gloves using water as necessary to remove perspiration. Drain excess water and hang to air-dry.
- e) If desirable, use fabric liners under rubber gloves to absorb perspiration or for additional warmth.
- f) Wear leather protectors over insulating gloves, except as follows:
  - Use Class 00 gloves for any work up to 250 volts where small equipment and parts manipulation require high finger dexterity. Voltages between 250 and 300 require the use of leather protectors.
  - After using Class 00 gloves without the protectors, do not use them again above 250V without first being electrically tested.



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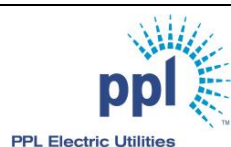
- Match the size of leather protectors to the size of the rubber gloves.
- **DO NOT** use leather protectors for any other purpose.

**5.5.5 Eye and Face Protection**

- a) Face shields worn for protection against electric arc must have a minimum Arc Thermal Performance Value (ATPV) of 20 cal/cm<sup>2</sup>.
- b) Replace face shields when accumulated surface scratches obstruct the view.
- c) The requirements for face protection are as specified in Safety Rule Book, Section 8, Attachment B.
- d) Wear a face shield or non-conductive safety goggles/glasses over any other eyewear that has a metal frame.

**5.5.6 Tools**

- a) **NOTE:** Non-conductive tuning tools are acceptable to use within the Minimum approach distance for making adjustments on electronic components. These tools have an exposed metallic tip, but the metallic portion of the tool is not continuous.
- b) Use of insulated hand tools inside the Minimum approach distance is permissible to manipulate exposed energized parts operating at greater than 50 volts and up to 1000 volts.
- c) Use insulated tools when working above energized equipment where a tool could fall, slip or otherwise come in contact with exposed energized parts.
- d) Use insulated hand tools constructed in accordance with the American Society for Testing and Materials (ASTM) F1505 Standard. Inspect insulated tools prior to use. Replace the tool if there is damage to the insulating portion.
- e) The use of insulated hand tools does not eliminate the need to use voltage rated gloves or other insulating barriers where a contact hazard exists with other exposed energized conductors/parts (operating at 50 volts or more) in the work area.
- f) Before using hot line tools (such as hot sticks and rescue hooks), inspect for defects, wipe down as appropriate, and check for current test date.



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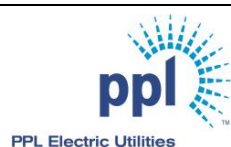
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- g) Use hot line tools, where appropriate, to maintain isolation distance from energized equipment.
- h) Use a ladder or other climbing device to enter and exit a manhole or subsurface vault exceeding 4 feet deep. Do not step on cables or other structures in the manhole to climb out.
- i) Ensure that labels on power tools are legible enough to determine the wattage of the tool, and therefore not overload an extension cord. Discard the tool if there is no replacement label.

**5.6 Wearing ARC-Flash Apparel**

- 5.6.1 **DO NOT** wear clothing made from synthetic materials (such as acetate, nylon, polyester and spandex) or blends of natural and synthetic fibers inside a Flash Protection Boundary.
- 5.6.2 Wear arc-flash apparel rated for the potential arc-flash conditions. The ATPV rating must be on the garment label.
- 5.6.3 Clothing worn under a flash suit or under arc flash apparel must also be flame resistant, or made of 100% natural fiber such as cotton, wool, or silk (as tagged by manufacturer).
- 5.6.4 Button shirt sleeves and jackets at the wrist and neck when wearing arc-flash apparel.
- 5.6.5 Arc-flash apparel should not fit tightly when layered. The air gap between layers provides additional protection.
- 5.6.6 Protection for the hands and feet are also required when wearing arc-flash apparel. Heavy-duty work shoes and voltage-rated gloves with leather protectors are appropriate for flash protection as well as shock protection. Also, non-voltage rated flame retardant gloves are appropriate.
- 5.6.7 Inspect all arc-flash PPE products for damage before and after every use. Check for rips and tears, as well as any soiling (especially oil or other combustible) which could adversely impact the arc-thermal protective characteristics of the product. Follow procedure for getting damaged products repaired or replaced.
- 5.6.8 Follow the garment manufacturer's instructions for cleaning and maintaining arc-flash apparel.
- 5.6.9 The surfaces of arc face shields and hood shields are *not* scratch or chemical resistant. Use only warm, soapy water for cleaning. Pat dry using a soft cloth.





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5.6.10 Ventilation fans can provide additional comfort when using a 40 or 50 cal. suit. This option is available at the user's discretion.

5.7 Switchgear

5.7.1 Work on switchgear having an energized feeder is restricted. Access to the feeder bus/conductor compartments must be physically locked, or barricaded and posted.

5.7.2 Perform Live-Dead-Live voltage checks prior to doing any work.

5.7.3 Before working in the breaker cubicle, remove the control power source, identify and avoid contact with it, or insulate it.

5.7.4 **DO NOT** enter medium voltage (>600 volts) breaker cubicles having an energized bus until the isolation shutters are verified closed.

5.7.5 Verify that all door fasteners and hardware are in place and secure before returning a breaker to service.

5.7.6 Ensure that all retaining bolts are secure when working around switchgear. If they are not, take appropriate actions to have any damaged retaining bolts repaired.

5.7.7 Inspect the breaker to ensure it is in the open position and with springs discharged (if applicable) before reinstalling a breaker into the cubicle.

5.7.8 Refer to Attachments B and C (greater than 600 volts nominal) for protective equipment requirements when opening hinged covers or removing fuses on 4160 volt and above switchgear.

5.8 Fuses/Capacitors

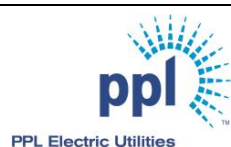
5.8.1 Before replacing a fuse, verify the replacement matches the rating and type of the original fuse.

5.8.2 Use fuse pullers and insulated gloves to remove fuses.

5.8.3 Before working on a capacitor, disconnect it from the voltage source, wait at least five minutes, and discharge it by shorting the terminals.

5.9 Electronic Equipment

5.9.1 Discuss electro-static discharge in the job brief/tailboard conference and take appropriate precautions.



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5.10 Temporary Wiring

5.10.1 Do not leave temporary wiring (i.e. extension cords) in place longer than 90 days.

5.10.2 It is permissible to leave temporary wiring in place for longer than 90 days under one condition: a qualified worker must inspect for shorts, grounds, and physical damage every 90 days, and place a tag on the item documenting the inspection.

5.10.3 Consider converting temporary wiring to a permanent installation after it is in place for greater than 90 days.

5.10.4 Route temporary wiring so that it is not a safety hazard to permanent station equipment or personnel.

5.11 Extension Cords, and Cord/Plug Connected Tools

5.11.1 NOTE (1): A Ground Fault Circuit Interrupter (GFCI) may not be appropriate due to the sensitivity of some diagnostic equipment. If this is the case, test the standard extension cord for continuity or equip it with a Ground Continuity Monitor (GCM). A GCM monitors ground continuity and warns of other hazardous conditions.

5.11.2 NOTE (2): Use of power strips in office areas is acceptable.

5.11.3 Use GFCI on all 120V extension cords and cord/plug connected tools.

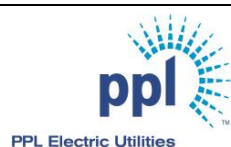
5.11.4 Use GFCIs on all 120 volt, single-phase 15, 20, and 30 amp receptacles that are not part of the permanent wiring of a building or structure.

5.11.5 Extension cords are not a substitute for fixed wiring of a structure. Do not attach them to building surfaces, run through wall holes, or conceal them behind walls, ceilings or floors.

5.11.6 Protect extension and service cords from the elements when used outdoors.

5.11.7 Before using an extension cord, inspect it for the following defects. Remove defective extension cords from service and tag them for repair or replacement as appropriate. Look for:

- a) Loose parts
- b) Damaged or deformed pins
- c) Cut outer covering and conductor insulation



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- 5.11.8 **DO NOT** fasten extension cords using staples, or hang them in a fashion that could damage the outer jacket, insulation, or conductors.
- 5.11.9 Use firm or rigid tubing, or similar material, to protect all extension cords whenever they run through a doorway, window, metal opening, or other similar passage way.
- 5.11.10 Elevate extension cords and welding leads where they cross aisles or walkways and pass through work areas. If this is impractical, tape the cords to the floor to protect them from damage and minimize the tripping hazard.
- 5.11.11 Take the following precautions when working around water or other conductive liquids, metal walkways, metal scaffold planking, or other conductive objects:
- a) Use a GFCI outlet.
  - b) Ensure hands are dry when plugging or unplugging energized extension cords.
  - c) Secure locking connectors after connection, if applicable.
  - d) If an extension cord is wet from immersion, and is still energized (or you don't know if it's still energized), handle it with protective equipment.

5.12 Batteries and Battery Rooms

- 5.12.1 Refer to Safety Rule Book, Section 8 titled: Batteries and Battery Rooms.
- 5.12.2 Be very careful when carrying or using conductive materials around batteries. Use insulated 'handle' hand tools. Remove rings, watches, etc., (or render them non-conductive) before working on the batteries.
- 5.12.3 **DO NOT** touch exposed conductors on batteries.
- 5.12.4 **DO NOT** remove vent plugs from cells unless specific maintenance work is required. Immediately reinstall vent plugs after work is completed.
- 5.12.5 Verify that ventilation in the battery room is operable.
- 5.12.6 Take precautions to protect workers from accidentally contacting batteries and related equipment. For example, cover battery terminals with a rubber blanket. Keep metal tools off the top of the batteries.
- 5.12.7 **DO NOT** use mercury thermometers when taking electrolyte cell temperature. If the thermometer should break, mercury could run into the cell and possibly cause an explosion.

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5.12.8 Wear the appropriate personal protective equipment.

5.13 Temporary Protective Grounding

5.13.1 Refer to Safety Rule Book, Section 8 titled: Temporary Protective Grounding – General Requirements and Safety Procedure (SP) 05 – Grounding and Bonding

5.13.2 Only qualified electrical workers may assemble, control, inspect, test, install, and remove grounds.

5.13.3 Use ground jumpers and clamps that have the appropriate rating for the equipment or lines that require grounding. They must be capable of conducting the maximum fault current that will flow until the fault condition clears.

5.13.4 Properly maintain all grounding devices. This includes regular inspections and periodic electrical testing as follows:

- a) Inspections - Inspect grounds prior to each use and at regular intervals not to exceed 1 year, or as often as service conditions may require. Look for cuts in the protective sheath and damage to the conductors. Check clamps and connector strain relief devices for cracks and tightness. Check cables and clamps before and after each use.
- b) Testing – Verify the electrical resistance of portable grounding sets at regular intervals not to exceed 3 years. Heavy usage, service conditions, site procedures, or manufacturer's instructions may require more frequent testing.
- c) Electrical resistance must not exceed the acceptable range as shown on the equipment tag or as stated by the manufacturer. Return high-resistance ground sets for repair or replacement. Test repaired or modified grounds before returning them to service.
- d) Install and remove temporary protective grounds in accordance with the applicable work practice.
- e) Ground all energized temporary skid-mounted equipment.
- f) The grounding requirements for work on underground circuits are the same as the requirements for overhead lines and/or electrical equipment.



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**NOTE: After disconnecting a cable from a power source, it may retain a capacitive charge. Discharge and ground the cable before touching.**

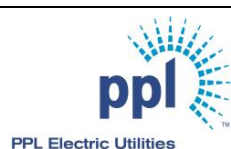
- g) Ground a mobile crane or other lifting equipment if the boom will come in close proximity to energized overhead lines. Keep crewmembers away from the ground point when the boom is near energized lines. Use a highly visible watchman, with red flags, to warn the crane operator if the boom is approaching the Minimum Approach Distance.
- h) Take additional precautions against hazardous ground voltages by using barricades, applying temporary insulation on the lines, and by wearing rubber gloves and overshoes.

**5.13.5 Installation and Removal of Grounds**

- a) Verify that the circuit is de-energized and tagged/locked out prior to installing temporary protective grounds.
- b) Ensure that ground clamps and cables have adequate capacity, and are designed for use as temporary protective grounds.
- c) Select a grounding location(s) that is between the work location and all possible sources of power, but keep it as close as practical to the work location.
- d) Clean all clamp contact surfaces and connection points to remove oxidation and any other contaminants.
- e) Use the shortest grounding cable available. Secure the ground cables to minimize the whipping action that can occur when fault current flows through the cables.
- f) Attach temporary safety grounds to a ground point in the following order of preference:

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- 1. System Neutral
  - 2. Ground Rod
  - 3. Anchor Rod
  - 4. Driven Bull point (4 feet minimum depth)
- g) Verify that temporary protective grounding cables are off the lines or equipment before placing them back in service.
  - h) It is permissible to remove grounds temporarily for electrical tests. Employees involved in the testing process must wear rubber gloves



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and tested overshoes and/or apply rubber insulation as necessary to isolate themselves from the hazardous test voltages.

- i) Connect and remove grounds as follows:
  - Installation – Connect to the grounding point first, and then attach the other end to the line or equipment using a hot-line tool.
  - Removal – Using a hot-line tool, remove the line or equipment connections first. Remove the grounding point connection last.
- j) Store ground sets and connection hardware in a relatively clean and dry area when not in service.

#### 5.14 Lifted Leads

5.14.1 A qualified electrical worker must remain in the work area if there are energized lifted leads. The leads can be left unguarded if they are taped, access is restricted, and the hazard is clearly identified. Under these conditions, the following requirements apply:

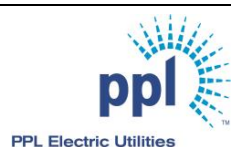
- a) Tape the exposed ends of all energized leads within a panel, termination or junction box. Taping is permissible in this case since unqualified workers are restricted from these areas.

5.14.2 Use one of the following methods when the energized leads are in an area other than a panel, termination or junction box:

- a) De-energize the leads using the appropriate Energy Control Process and tape the exposed ends. Since the leads are de-energized and taped, there is no hazard, and access restriction or hazard recognition is not required.
- b) Tape the energized leads and encase them within a special Foreign Material Exclusion (FME) style red bag (has a drawstring and is stenciled "Potentially Energized Leads" in white letters). The bag functions as a barricade, and will have the Field Supervisor's name on the label. Only a qualified electrical worker can remove the bag, and only after receiving the Field Supervisor's permission.
- c) Restrict access to the area using red and white flagging and an owner's tag.

#### 5.15 Low Tension Network

5.15.1 Refer to Safety Rule Book, Section 8 titled: Low Tension Network.



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- 6.1 PPL EU Safety Rule Book
- 6.2 Operating Instruction (OI) 153 – Energy Control Process – Protective Permit & Tag System (Transmission & Distribution)
- 6.3 Safety Procedure (SP) 05 – Grounding and Bonding

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 [NFPA 70E Standard for Electrical Safety in the Workplace](#)
- 7.2 [OSHA 29 CFR 1910.269 \(Electric Power Generation, Transmission, and Distribution\)](#)

## **8.0 TRAINING / SAFETY**

- 8.1 Only qualified electrical workers perform work on or near exposed energized equipment (within the MAD or Limited Approach Boundaries).

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

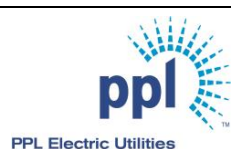
## **10.0 ATTACHMENTS**

- 10.1 Attachment A – System Shops Tasks

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years, or when regulations change, by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).





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## 12.0 RECORD OF REVISIONS


<b>Rev</b>	04	<b>Date</b>	02/01/21	<b>Effective</b>	04/22/2021
<b>Prepared by:</b>	Tyler Honor, Safety Professional				
<b>Reviewed by:</b>	Safety Operations Safety Professionals: Dalton Shorts, Brian Kostik, Jared Dyer				
<b>Approved by:</b>	Chuck Wood, Manager – Safety Operations				
<b>Revision Comments:</b>	Added section 5.1.20				

<b>Rev</b>	03	<b>Date</b>	05/30/2018	<b>Effective</b>	06/08/2018
<b>Prepared by:</b>	Jared Dyer, Safety Operations				
<b>Reviewed by:</b>	Safety Professionals: Brian Kostik, Brian Matweecha				
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations				
<b>Revision Comments:</b>	Added OI-153 to references; Removed the old 5.1.17 talking about blocking reclosing between the breaker and the first device; Added a new 5.1.7 requiring a white tag permit to block reclosing for all energized glove and sleeve work; Added a definition: White Tag Permit; Replaced "FR clothing" with "Arc flash apparel"				

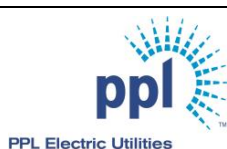
<b>Rev</b>	02	<b>Date</b>	07/27/2017	<b>Effective</b>	07/27/2017
<b>Prepared by:</b>	Deborah Sweinhart, Safety Operations				
<b>Reviewed by:</b>	Safety Professionals: Brian Kostik, Jared Dyer, Steve Mondschein, Dalton Shorts, and Elizabeth McKay				
<b>Approved by:</b>	Brian Matweecha, Manager-Safety Operations				
<b>Revision Comments:</b>	Reviewed to ensure compliance with the current Records Retention Program.				

<b>Rev</b>	01	<b>Date</b>	12/01/2015	<b>Effective</b>	8/14/2016
<b>Prepared by:</b>	Brian Kostik				
<b>Reviewed by:</b>	Jared Dyer, Deborah Sweinhart				
<b>Approved by:</b>	Scott Parker				
<b>Revision Comments:</b>	<ul style="list-style-type: none"> <li>• Changed Restricted Approach Boundary to Minimum Approach Distance</li> <li>• Changed Qualified Employee to Qualified Electrical Worker</li> <li>• Changed FR clothing to Arc Flash Apparel</li> <li>• Replaced Attachments B and C with new information that is consistent with the OSHA updated 29 CFR 1910.269 regulations</li> <li>• Reference language used by PPL Facilities Management, they follow and train Facilities Management employees on NFPA 70E. They use the term: LIMITED APPROACH BOUNDARY [4.5.2] in lieu of FLASH PROTECTION BOUNDARY [4.5.1]. Additionally, they use the term RESTRICTED APPROACH BOUNDARY [which is not referenced] in lieu of MINIMUM APPROACH DISTANCE [4.5.3].</li> </ul>				



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<b>Rev</b>	00	<b>Date</b>	08/14/2012	<b>Effective</b>	08/14/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**Attachment A  
System Shops Task Matrix**

System Shops Tasks	GSP 51 Barrier and Arc Flash apparel	PPE Requirements	Notes:
<b>1. Voltage Regulator Testing</b>			
-	Hazard Category 1, Arc Flash apparel Required, Either workman is required to observe and protect area or a 10 ft. barrier for shock hazard from control. Also need a one foot restrictive approach boundary.	Hard Hat, safety glasses, steel toe shoes, gloves (as appropriate) and non-conductive tools when working on energized control. Safety vests if within Road right-a-Way.	Arc Flash apparel required since operating a regulator (arcing in oil)
<b>Field Testing</b>			
-	foot barrier for shock for unqualified workers.	Non-conductive tools when working on energized control.	
<b>Shop Testing</b>			
<b>2. Stokes, Generator or Barons 480 Volt - (In Barons opening control door energized. Viewing only- no other work)</b>	Hazard Category 2, Arc Flash apparel Required, face shield and hearing protection. Either workman is required to observe and protect area or a 10 ft. barrier for flash protection barrier. Also need a one foot restrictive approach boundary.	Hard hat, safety glasses and UV eye protection and face shield, class 0 gloves.	Need all Arc Flash apparel and PPE to enter the 10 foot flash protection boundary.
<b>3. Electronic OCR Testing - Field</b>	Hazard Category 0, 100% natural cotton clothing. Either workman is required to observe and protect area or a 10 ft. barrier for shock hazard from control. Also need a one foot restrictive approach boundary. Hazard Category 1 if switching with control handle, Arc Flash apparel. Either workman is required to observe and protect area or a 10 ft. barrier for flash protection boundary. Also need a one foot restrictive approach boundary.	Hard Hat, safety glasses, steel toe shoes, gloves (as appropriate) and non-conductive tools when working on energized control. Safety vests if within Road Right-a-Way.	Fault current is less than 10KA on controls. Cover exposed AC feed. Note: When changing battery in control, remove AC source.
<b>3A. Electronic OCR Testing - Field and switching with line voltage.</b>		Hard Hat, safety glasses, steel toe shoes, gloves (as appropriate) and non-conductive tools when working on energized control. Safety vests if within Road Right-a-Way.	Cover exposed AC feed. Note: When changing battery in control, remove AC source.
<b>3B. Electronic OCR Testing - Shop</b>	Hazard category zero. Need 10 foot barrier for shock for unqualified workers.	Non-conductive tools when working on energized control.	



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4. Welding - Field	Not Apply	Anyone assisting the welder directly must wear the same PPE as the welder. All others must stand back at least 5 feet and not look at the welders flash. Welder is responsible to notify all that flash is to occur or apply barrier around apparatus while welding to eliminate flash hazard.	
5. Doble Testing	10 foot shock protection boundary, Hazard category 0 since very low current with test set.	Hard hat, safety shoes, safety glasses. Fall protection if on top of transformer	8.90 - Use one of the following methods to prevent unauthorized workers from entering a high voltage/power factor test area: - Guard the test area using distinctively colored safety tape, - Limit access using a barrier or a barricade, - Post one or more qualified workers.8.91 - Stay in visual contact with the person handling the hook of the energized test lead when operating the external safety switch(es) during high voltage / Power factor testing.
- Holding energized test cable/hook	10 foot flash protection boundary, Hazard category 0.	Hard hat, safety shoes, safety glasses, class 2 rubber gloves, tested overshoes. Fall protection if on top of transformer	8.93 - Wear rubber gloves and tested overshoes and keep protected body parts in the clear while handling any energized test cable when assisting in AC doble test.
- Musing wire on bushings	Hazard category 0	Hard hat, safety shoes, safety glasses, work gloves. Fall protection if on top of transformer.	Reason: No static available due to coupling of windings to tank. Note 2: Never move oil over the windings without grounding all bushings.
6. Network Transformer in Vault (Testing) - Transformer is disconnected both primary and secondary. SS crew work to doble test, TTR or megger	Hazard category 1, All people must be outside the restricted area during test and must not be in contact with device being tested.	Hard hat, safety shoes, safety glasses, work gloves as appropriate. Also, follow all applicable doble testing rules above.	Note: Need to verify Oxygen levels (i.e. air quality)



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<b>7. Network Transformer in Vault (Inspection). SS crew to view possible leak in radiators, etc.</b>	Hazard category 1	Hard hat, safety shoes, safety glasses, work gloves as appropriate. Safety vests if within Road right-a-Way.	Note: Need to verify Oxygen levels (i.e. air quality)
<b>8. AC Hi-Pot Testing (Up to 80kV)</b>	Hazard category 0 (for Arc Flash) since very low current with test set. Restricted approach is 3 feet 7 inches and protection boundary is 10 feet. Either workman is required or physical boundary.	Hard hat, safety shoes, safety glasses, work gloves as appropriate. If in Shop, work gloves as appropriate. -- Note: Ground energized lead before and after test as a safety precaution.	Minimum approach distance is based on 50kV AC Hi-Pot. All connections from AC Hi-Pot are made de-energized. No residual voltage from this AC source. Also, follow rules 8.90 and 8.91 -- 8.90 - Use one of the following methods to prevent unauthorized workers from entering a high voltage/power factor test area:- Guard the test area using distinctively colored safety tape, - Limit access using a barrier or a barricade, - Post one or more qualified workers.8.91 - Stay in visual contact with the person handling the hook of the energized test lead when operating the external safety switch (es) during high voltage / Power factor testing
<b>9. DC Hi-Pot Testing (Up to 138kV - DC Volts)</b>	Hazard category 0 (for Arc Flash) since very low current with test set. Minimum approach distance is 3 feet 7 inches and protection boundary is 10 feet. Either workman is required or physical boundary.	Note: Must follow safety rule 8.92. Wear class 2 rubber gloves and tested overshoes when assisting in the DC high potential test by connecting or disconnecting the test leads and/or grounds. Upon completion of the DC high potential test, connect a drain ground to the conductors or electrical equipment until the test charge drains off. Maintain this ground for a minimum of four times the total test time, unless the equipment is ready to be placed into service.	Hazard category 0 due to low DC current and no flash potential. Minimum approach distance is based on 138kV (DC). Also follow 8.90 and 8.91 -- 8.90 - Use one of the following methods to prevent unauthorized workers from entering a high voltage/power factor test area:- Guard the test area using distinctively colored safety tape, - Limit access using a barrier or a barricade, - Post one or more qualified workers.8.91 - Stay in visual contact with the person handling the hook of the energized test lead when operating the external safety switch (es) during high voltage / Power factor testing

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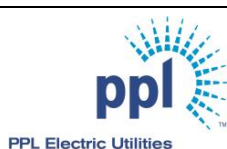
<b>10. Storm Duty</b>			
<b>Assessor</b>	-	Hazard category 0	Hard Hat, safety shoes, safety Glasses, Safety vest if within 15 feet of vehicular traffic anytime, day or night and work gloves as appropriate. All assessors regardless of qualifications must stay 12 feet from any downed conductor. Note: Downed lines are to be treated as energized until grounded and under a permit.
<b>Permit Holder</b>	-	Hazard category 0	Hard Hat, safety shoes, safety Glasses, Safety vest if within 15 feet of vehicular traffic anytime, day or night and work gloves as appropriate. All permit holders regardless of qualifications must stay 12 feet from any downed conductor. Note: Downed lines are to be treated as energized until grounded and under a permit.
<b>11. DT Test set</b>	Hazard Category 0 - Note: Need to establish 10 foot barriers on each side of device being tested to ensure no unauthorized access. Minimum approach distance is 2 foot 2 inch. Note - Place another physical boundary at 2 foot 2 inch.		Work gloves as appropriate
<b>12. Open Energized Pad Mount - 1 phase or three phase</b>	Hazard Category 2 . ARC protection (ARC FLASH APPAREL Class 2 clothing, Class 2 face shield and hearing protection). Need flash protection boundary of 12 feet, minimum approach distance is 2 feet 2 inches. Note: Flash protection boundary is by watchman or barricade.		Hard Hat, eye protection and safety shoes. Class 2 rubber gloves, sleeves, tested overshoes and Safety vest if within 15 feet of vehicular traffic anytime, day or night.
			Note: Hazard category 2 only applies to initial open. Can close for testing and reopen with hazard category 1. Note always need class2 gloves, overshoes, and sleeves when opening pad on hazard category 1.



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- Pad along road	Hazard Category 2 . ARC protection (ARC FLASH APPAREL Class 2 clothing, Class 2 face shield and hearing protection). Need flash protection boundary of 12 feet, minimum approach distance is 2 feet 2 inches. Note: Flash protection boundary is by watchman or barricade.	Hard Hat, eye protection and safety shoes. Class 2 rubber gloves, sleeves, tested overshoes and Safety vest if within 15 feet of vehicular traffic anytime, day or night.	Note: Do not have to close road while opening pad mount provided a watchman keeps all pedestrians outside the flash boundary. Vehicle traffic ok to pass by.
- Switching on tap pole	Hazard Category 1.	Hard Hat, eye protection and safety shoes. Class 2 rubber gloves, sleeves, tested overshoes and Safety vest if within 15 feet of vehicular traffic anytime, day or night	Note: Do not have to close road while opening cut-out along road provided a watchman keeps all pedestrians outside the flash boundary. Vehicle traffic ok to pass by.
<b>13. Closing or opening fuse Cutout</b>			
- Insulated bucket	Safety Rule 8.31. Hazard Category 1, Arc Flash apparel, Class 2 rubber gloves, 16 foot stick, Flash protection boundary is 12 ft., minimum approach distance is 2ft 2 in. Hazard Category 1, Arc Flash apparel, Class 2 rubber gloves, tested overshoes, 16 foot stick, Flash protection boundary is 12 ft., minimum approach distance is 2ft 2 in.	Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.	Note: 16 foot is the minimum distance as calculated by EU Engineering. ARC FLASH APPAREL is required (i.e. for consistency)
- Ground		Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.	
<b>14. Switching energized elbow for Cable Test</b>	Hazard category 1, Arc Flash apparel, Class 2 rubber gloves, tested overshoes, 6 foot tested stick, flash protection boundary is 12 ft. and minimum approach distance is 2 ft. 2 in. Note: Flash protection boundary is by watchman or barricade.	Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.	Note: Do not have to close road while switching provided a watchman keeps all pedestrians outside the flash boundary. Vehicle traffic ok to pass by.

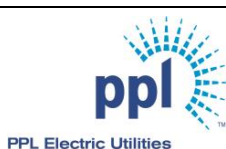


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<b>15. Removing tap pole LA and cable FFrom tri-mount bracket</b>	<p>Note 1: Work is in the minimum approach distance but on de-energized equipment. Hazard category 1, Arc Flash apparel, minimum approach distance is 2 ft. 2 in and flash protection boundary is 12 ft. Note 2: All work FFrom insulated bucket - must wear class 2 rubber gloves, class 2 sleeves. <b>Note 3:</b> Preferred work method is to de-energize tri-mount bracket using hot line clamp with switch stick. If cannot do safely, a JL must be called.</p>	<p>Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.</p>	<p>Note: This is a change of work practice since clearance is not available to work outside the minimum approach distance.</p>
<b>16. Handyman assisting cable test</b>	<p>Handyman must remain outside of flash protection boundary at all times. Flash protection boundary in effect when opening energized pad mount and switching elbows. If Handyman is qualified electrical worker, can approach up to the minimum approach distance of 2 ft. 2 in. when pad is open provided no work is being performed on energized equipment.</p>	<p>Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.</p>	<p>Note 1: Arc Flash apparel not required for handyman since they are not permitted to be in the flash boundary area. Note 2: Whenever a pad mount is opened after initial, handyman must be 10 feet FFrom apparatus. Note 3: Never a reason during cable test to be in contact with energized test leads.</p>
<b>17. Cable Testing - Preparing cable for test</b>	<p>Note: One end is on a feed thru and striped tag and the other end is removed FFrom a feed thru. Cable was already verified out of service, de-energized and grounded. Note 2: The cable personnel will be wearing Arc Flash apparel but can be Hazard classification 0.</p>	<p>Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.</p>	<p>Note: Assumes Dead-FRont Transformers.</p>
<b>18. Actual Cable test</b>	<p>- Hazard category 0 - 40 volt max - check neutral integrity.</p>	<p>Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.</p>	
<b>TDR Test</b>			



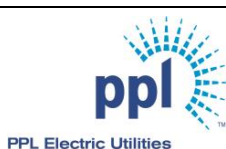


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<b>Doble or VLF Test</b>	-	10 foot flash protection boundary, Hazard category 0, restricted approach is 3 ft. 2 inch for VLF and doble .	Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.	Note: restricted approach boundary defined as follows: Up to 7.2 kV (L-G) is 2ft 2 in, Up to 40kV (L-G) is 3 ft. 2 in. and for voltages up to 56kV (L-G) is 3 ft. 7 in.
	-	11 foot flash protection boundary, Hazard category 0, restricted approach is 3 ft. 2 inch for PD.	Hard Hat, eye protection and safety shoes, and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night.	Note: restricted approach boundary defined as follows: Up to 7.2 kV (L-G) is 2ft 2 in, Up to 40kV (L-G) is 3 ft. 2 in. and for voltages up to 56kV (L-G) is 3 ft. 7 in.
<b>PD Test</b>				
<b>19. Live FRont Transformers</b>		<b><i>Do not exist for URD. Note: Not worked on energized by any System Shops employees.</i></b>	<b><i>Note: To Open any pad mount must follow rules under Item #12 in this document.</i></b>	Note: To perform visual review of open live FRont trf, Arc Flash apparel - Hazard Category 1 is required.
<b>20. Traffic Control for cable testing</b>			Hard Hat, eye protection and safety shoes, safety traffic vest if within 15 feet of vehicular traffic anytime, day or night. Must also complete MST 500 to be able to perform traffic control.	Follow traffic control GSP 1
<b>21. Batteries</b>				
<b>- Alber cell corder (EU 240 volts and below)</b>		Hazard Category 1 Arc Flash apparel is required when working on battery system.	hard hat, eye protection, safety shoes, hand protection - Class O with protectors. Portable eye wash station within 25 feet	Note: Check Alber Book.
<b>- Alber cell corder (Generating Plant 360 volt or above 240 volts)</b>		Hazard Category 2 unless fault current is less than 10kA. If less than 10kA then hazard category 1. Hazard Category 1 Arc Flash apparel is required for 240 volt and less battery systems. If battery system is above 240 volt then hazard Category 2 unless fault current is less than 10KA.	hard hat, eye protection, safety shoes, hand protection - Class O with protectors. Portable eye wash station within 25 feet	<b>Note: For over 240 volts assume Hazard category 2 unless specially provided short circuit current by Engineering</b>
<b>- Alber Capacity Test</b>		If less than 10kA then hazard category 1.	hard hat, eye protection, safety shoes, hand protection - Class O with protectors. Portable eye wash station within 25 feet	<b>Note: For over 240 volts assume Hazard category 2 unless specially provided short circuit current by Engineering</b>





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<p>- Forklift Charging</p>	<p>Charger must be off prior to connecting. Harard category 0        Eye protection, face shield,        chemical resistant gloves, full        body apron and safety shoes. --        Arc Flash apparel not required.</p>	<p>safety shoes, hand        protection, work gloves, eye        protection - Must be done in        posted charging areas (i.e.        eye wash station present)         Must be done in posted        charging areas (i.e. eye wash        station present)</p>	
<p>- Forklift water or electrolyte.</p>			
<p>- Electronic Control batteries</p>	<p>Hazard Category 0. These are        sealed jar batteries.</p>	<p>hard hat, eye protection,        safety shoes, hand protection</p>	
<p>22. Repairing DT's</p>		<p>Safety shoes, work gloves  <u>and eye protection</u> are        required for all tasks. The        specific type of work glove        depends on the task being        completed.</p>	<p>Note: Eye protection is now        required for all DT repair        activities.</p>
<p>- Handling Porcelain</p>		<p>Appropriate work gloves (i.e.        leather, Kevlar, etc. -- not        nitrile) <u>and eye protection</u>        shall be worn when working        with porcelain bushings        whenever removal, tightening        or handling. Safety shoes.</p>	<p>Note: Eye protection is now        required for handling porcelain.</p>
<p>- Fixed Grinder         - Portable Grinder/Sanding        - Spray painting (not paint booth)</p>		<p>safety glasses, face shield,        and safety shoes        safety glasses, face shield,        and safety shoes, appropriate        work gloves (leather)        safety glasses, and safety        shoes, dust mask or HEPA        filter</p>	<p>Verify that the work rest and        grinding wheel is 1/8 inch or        less and the opening between        the tongue guard and the        grinding wheel is 1/4 inch or        less.</p>
<p>- Using Razor Knife</p>		<p>safety shoes and gloves        (leather at minimum -        preferable cut resistant) Stay        out of line of fire - cut away        FFrom the body.</p>	
<p>- Pumping Oil - in or out</p>		<p>Nitrile gloves , safety shoes</p>	
<p>- Moisture eater</p>		<p>Nitrile gloves , safety shoes</p>	



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**23. Fall Protection**

**- Tankers**

Fall restraint system (seat belt type) is required. Fall arrest systems are not allowed. Safety shoes and safety traffic vest if within 15 feet of vehicular traffic anytime, day or night. If in the field, add safety glasses and hard hat. Gloves for climbing (all locations).

Required because connection is below middle of back)

**- Transformers**

Fall restraint system (seat belt type) is required. Fall arrest systems are not allowed. Safety shoes. If in the field, add safety glasses and hard hat. Gloves for climbing.

Required because connection is below middle of back)

**- Above 4 foot working platform**

Fall restraint system (seat belt type) is required. Fall arrest systems are not allowed. Safety shoes. If in the field, add safety glasses and hard hat. Gloves for climbing.

Required because connection is below middle of back)

**Aerial lift device such as a bucket truck**

Fall restraint system (seat belt type) or fall arrest system is required. Safety shoes. Safety traffic vests if within 15 feet of vehicular traffic anytime, day or night, safety glasses and hard hat. Gloves for climbing.

Note: Cable Test Assistants when working above the system neutral must have class 2 gloves and sleeves on at all times. Refer to Safety Rule 8.23.

**24. Vehicle (snow removal)**

All snow must be removed FRom top of vehicles prior to exiting the SFC. This can be done by: 1. Parking vehicle in shop area prior to anticipating snow or to melt off; 2. Brush off outside or 3; bring inside and clean-off.

Note: All glass must be FRee of ice, snow and fogged prior to operating the vehicle.

**25. Pumping oil (spill Response)**



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<p>- Shop</p> <p>- Field</p>	<p>Removing oil can only be done by filter press connected to the system alarm system. These are designated in the shop area by the orange colored electrical outlet. Spill Response materials are located in SS and throughout the SFC. An attendant must always be present during oil pumping operations. PPE Required - Work gloves, <u>eye protection</u> and safety shoes. Hard Hat, safety glasses, safety shoes and work gloves. Before moving any oil, do a walk down of the facility. All storm drains must have oil booms placed around. Oil absorbent pads need to be on site and an attendant must always be present. A Spill Response Manual must also be available and discussed in the tailboard.</p>	<p>Note: Always check and ensure that the tank or tanker has adequate room for oil (i.e. do not overfill). Never rely on alarms only.</p> <p>Follow tanker insulating oil requirements (i.e. set alarm, place booms around tanker, etc.)</p>
<p>26. Paint Booth</p>	<p>safety shoes, Tyvek suit, 3 M paint cartridge, eye protection, full face shield when using the half mask filter or full face filter. Also ensure that air flow system is operable. Gloves (nitrile or work gloves.</p>	
<p>27. Grinding Booth (OCR)</p>	<p>safety shoes, Tyvek suit, dust mask or HEPA filter, eye protection, full face shield for wire brush and eye protection for sander. Ensure that air flow system is operable. Work gloves</p>	
<p>28. Sand Blast Booth (small for OCR and DT)</p>	<p>eye protection with seal around eyes, safety shoes,</p>	
<p>29. Large sand blast booth</p>	<p>Self-contained breathing apparatus, safety shoes</p>	

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			8.90 - Use one of the following methods to prevent unauthorized workers FROM entering a high voltage/power factor test area:- Guard the test area using distinctively colored safety tape - Limit access using a barrier or a barricade - Post one or more qualified workers.8.91 - Stay in visual contact with the person handling the hook of the energized test lead when operating the external safety switch (es) during high voltage / power factor testing.
- At Service Center	10 foot flash protection boundary, Hazard category 0.	safety shoes, appropriate work gloves when moving sticks.	
- Moisture eater		safety shoes, nitrile gloves when using moisture eater.	
33. OCR Repair			
- Portable Grinder/Sanding		safety glasses, full face shield for wire brush and eye protection for sander, safety shoes, and appropriate work gloves (leather)	
- Spray painting (not paint booth)		safety glasses, and safety shoes, dust mask or HEPA filter	
34. Overhead cranes		Hard hat, safety glasses and safety shoes	
35. Using a hammer or pulling staples		safety glasses and safety shoes and work gloves (leather, etc.)	
36. Banding material to pallet.		safety shoes, safety glasses and work gloves (leather, etc.)	



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37. Operating forklifts		Daily requirement to fill out fork lift <b>Form 5147 or 5148</b> depending on the type. This must be done by the first person to use the machine each day.	Must be qualified and take MST280, Classroom and then the specific MST course (MST281 through MST289) for the type of forklift.
38. Steam Clean Trf's			
- De-energized	Power Transformer must be on Permit and Grounded for work to be completed.	hard hat, safety glasses, full face shield, safety shoes, work gloves, rain gear (optional).	Note: De-Energized means transformer is out of service under permit and grounded.
- Energized	<b>Not allowed within PPL EU.</b>		
39. Fire Extinguisher			
- Weighing		safety shoes, work gloves	
- Filling		safety shoes, safety glasses, work gloves, dusk mask or HEPA filter in field; otherwise under the hood in the shop.	
- Emptying		safety shoes, safety glasses, work gloves, dusk mask or HEPA filter in field; otherwise under the hood in the shop.	
- Substation replacement		Hard hat, safety glasses, safety shoes. Must be a qualified electrical worker (complete MST 180)	
40. Rubber Goods			
- Packing		Safety shoes,	Use proper lifting and bending techniques - keep back straight and lift with legs.
- Loading RGs on racks		Safety Shoes and do not load above shoulder blades.	Do not rack two sleeves or boots together.
- Washing RG's		safety shoes	Only use approved chemicals.
- Use of Moisture Eater		safety shoes, nitrile gloves	
- Use of Utility Knives		Safety shoes, work gloves (Leather, Kevlar, etc.. -- not nitrile)	
- Testing RGs		Safety Shoes. Tester must be qualified (i.e. PET or SR PET)	



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- Moving RG Racks	Refer to item #36	Safety shoes, work gloves (Leather, etc.. -- not nitrile)	
- Banding - Moving material with pallet rack		Safety shoes, work gloves (Leather, etc.. -- not nitrile)	Note: Consider using helper if heavy.
41. PPE Required to walk through Generation Sites		hard hat, safety shoes and safety glasses. Safety glasses required in all parts of generation plant except for office areas. All other locations should either be posted or the owner plant will inform of additional PPE requirements.	Hearing protection as required.
42. Fueling Vehicle		Shut off engine, no smoking cannot re-enter the vehicle while fueling and <b><u>cannot use an electronic device such as cell phone.</u></b>	
44. Temporary Grounds	Inspect grounds before each use and test grounding devices on a periodic basis. Do not use a ground set with an expired test date or with defects. Inspect yearly and test every three years.		Follow DDI L308. Return failed ground sets to tool repair at the SFC.
45. Metal Ladder Use	Use metal ladders to perform work in areas where induced voltage is a hazard (for example, 500kV substations and switchyards).	Bond ladder to bleed off static.	Note: In a 500kV yard where induced voltages exist, consider using no insulated booms.
46. Drill Press		safety glasses, safety shoes. If there is a potential for debris, then don face-shield.	Drill guard must be in place during operation
47. Rotating lathe		safety glasses, safety shoes. If there is a potential for debris, then don face-shield.	All guards on lathe must be in use during operation



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49. Band saw	safety glasses, safety shoes.	All guards must be in use during operation.
<p>50. Work Glove use</p> <ul style="list-style-type: none"> <li>- Porcelain Bushing removal and installation or whenever applying any torque necessary for tightening.</li> <li>- External force to a bushing such as sanding</li> <li>- Using utility knives to cut gaskets or anytime the blade is open</li> <li>- Scrapping gaskets and removing stickers.</li> <li>- Lifting Equipment or working around sharp edges.</li> </ul>	<p>Safety glasses and hard hat required when working in the field in addition to the PPE required below.</p> <p>Safety shoes, work gloves (Leather, Kevlar, etc. -- not nitrile) <b><u>and eye protection.</u></b></p> <p>Safety shoes, work gloves (Leather, Kevlar, etc. -- not nitrile) <b><u>and eye protection.</u></b></p> <p>Safety shoes, work gloves (Leather, Kevlar, etc.. -- not nitrile)</p> <p>Safety shoes, work gloves (Leather, Kevlar, etc.. -- not nitrile)</p> <p>Safety shoes, work gloves (Leather, Kevlar, etc. -- not nitrile) <b><u>and eye protection as necessary.</u></b></p>	<p>Note: General rule - For fixed-non movable rotating machinery, gloves are not recommended. Portable power tools it is recommended that gloves be worn</p>





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### **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish safety requirements to be followed by all PPL Electric Utilities employees when inspecting and using all powder actuated tools in order to mitigate the risk of a safety impact concern during the use of a powder actuated tool and thereby satisfying the OSHA requirement.

### **2.0 RESPONSIBILITIES**

#### **2.1 Management**

- 2.1.1 Require all qualified employees to work within this procedure.
- 2.1.2 Assure employees are properly trained and qualified to use these tools. Only employees who have been trained in the operation of the particular tool in use may be allowed to operate a powder-actuated tool. Each employee must receive instruction in the recognition and avoidance of unsafe conditions and the regulations applicable to their work environment to control or eliminate any hazards or other exposure to injury or illness.
- 2.1.3 Require all PPL EU employees and/or non-PPL visitors under their supervision or at job sites under their direction are properly trained in the use of and comply with the use of all required personal protective equipment necessary to complete the safe operation of a powder actuated tool.
  - a. Eye and face protection
  - b. Hearing protection
  - c. Hand protection
  - d. Foot protection
  - e. Proper clothing

#### **2.2 Employees**

- 2.2.1 All employees involved in the use of powder actuated tools are responsible to work within the requirements of this procedure.

#### **2.3 Safety Operations**

- 2.3.1 Provide guidance and consultation for powder actuated tool training, use, and the wearing of personal protective equipment.



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### **3.0 APPLICABILITY**

- 3.1 This procedure establishes safety requirements to be followed by all PPL Electric Utilities employees when inspecting and using all powder actuated tools.

### **4.0 TERMS AND DEFINITIONS - N/A**

### **5.0 MAIN BODY**

#### **5.1 Eye and Face Protection**

##### **5.1.1 Requirements**

- a. Management shall ensure that each affected employee uses the appropriate eye and face protection when exposed to eye or face hazards from flying particles when using a powder actuated tool.

##### **5.1.2 Selection**

- a. Management shall base the selection of the appropriate eye and face protection on an evaluation of the performance characteristics of the eye and face protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules.

- 5.1.3 Management shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g. clip-on or slide-on side shields) meeting the requirements of this section are acceptable.

- 5.1.4 Management shall ensure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or wears eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

- 5.1.5 Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.



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5.2 Hearing Protection

5.2.1 General Requirements

- a. Hearing protective devices shall be provided and worn properly when used in areas/performing tasks where the noise level constantly exceeds 85 Dba.

5.2.2 Selection

- a. Management shall base the selection of the appropriate hearing protection on an evaluation of the performance characteristics of the hearing protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules (Reference Hearing Conservation Procedure and Hazard Assessment Appendix B or equivalent).

5.3 Hand Protection

5.3.1 General Requirements

- a. Management shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes.

5.3.2 Selection

- a. Management shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use and the hazards, potential hazards identified and safety rules.

5.4 General Requirements

- 5.4.1 Explosive-actuated fastening tools which are actuated by explosives or any similar means and propel a stud, pin, fastener, or other object for the purpose of affixing it by penetration to any other object shall meet the design requirements in "American National Standard Safety Requirements for Explosive-Actuated Fastening Tools," ANSI A10.3-1970, which is incorporated by reference as specified in Sec. 1910.6. This requirement does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard, and the like, or to stud welding equipment.

- 5.4.2 Employees and their helpers using powder actuated tools shall be safeguarded by means of head, face and eye protection.



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5.5 Inspection, Maintenance and Tool Handling

- 5.5.1 High-velocity tools. Tools of this type shall have the characteristics outlined in (a) through (h) of this section.
- 5.5.2 The muzzle end of the tool shall have a protective shield or guard at least 3-1/2 inches in diameter, mounted perpendicular to and concentric with the barrel, and designed to confine any flying fragments or particles that might otherwise create a hazard at the time of firing.
- 5.5.3 Where a standard shield or guard cannot be used, or where it does not cover all apparent avenues through which flying particles might escape, a special shield, guard, fixture, or jig designed and built by the manufacturer of the tool being used, which provides this degree of protection, shall be used as a substitute.
- 5.5.4 The tool shall be so designed that it cannot be fired unless it is equipped with a standard protective shield or guard, or a special shield, guard, fixture, or jig.
- 5.5.5 The firing mechanism shall be so designed that the tool cannot fire during loading or preparation to fire, or if the tool should be dropped while loaded.
- 5.5.6 Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.
- 5.5.7 The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force at least 5 pounds greater than the total weight of the tool.
- 5.5.8 The tool shall be so designed that it will not operate when equipped with the standard guard indexed to the center position if any bearing surface of the guard is tilted more than 8° from contact with the work surface.
- 5.5.9 The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.
- 5.5.10 Tools shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.



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5.5.11 Tools of the low-velocity-piston type shall have the following characteristics:

- a. The muzzle end of the tool shall be designed so that suitable protective shields, guards, jigs, or fixtures, designed and built by the manufacturer of the tool being used, can be mounted perpendicular to the barrel. A standard spall shield shall be supplied with each tool.
- b. The tool shall be designed so that it shall not in ordinary usage propel or discharge a stud, pin, or fastener while loading or during preparation to fire, or if the tool should be dropped while loaded.
- c. Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.
- d. The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force at least 5 pounds greater than the total weight of the tool.
- e. The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.
- f. The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

5.5.12 Tools of the hammer-operated piston tools - low-velocity type shall have the following characteristics:

- a. The muzzle end of the tool shall be so designed that suitable protective shields, guards, jigs, or fixtures, designed and built by the manufacturer of the tool being used, can be mounted perpendicular to the barrel. A standard spall shield shall be supplied with each tool.
- b. The tool shall be so designed that it shall not in ordinary usage propel or discharge a stud, pin, or fastener while loading, or during preparation to fire, or if the tool should be dropped while loaded.
- c. Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.



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- d. The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.
- e. The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

**5.6 Requirements for Loads and Fasteners**

- 5.6.1 There shall be a standard means of identifying the power levels of loads used in tools.
- 5.6.2 No load (cased or caseless) shall be used if it will accurately chamber in any existing approved commercially available low-velocity piston tool or hammer operated piston tool – low-velocity type and will cause a fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel. No individual test firing of a series shall exceed 300 feet per second by more than 8 percent.
- 5.6.3 Fasteners used in tools shall be only those specifically manufactured for use in such tools.

**5.7 Operating Requirements**

- 5.7.1 Before using a tool, the operator shall inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.
- 5.7.2 The tool shall be inspected at regular intervals and shall be repaired in accordance with the manufacturer's specifications by a qualified service technician. Any tool found not in proper working order shall be immediately removed from service with a defective tag.
- 5.7.3 Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any workmen.
- 5.7.4 No tools shall be loaded unless being prepared for immediate use, nor shall an unattended tool be left loaded.
- 5.7.5 In case of a misfire, the operator shall hold the tool in the operating position for at least 30 seconds, and then try to operate the tool a second time. If needed, wait another 30 seconds, holding the tool in the operating position; and then proceed to remove the explosive load in strict accordance with the manufacturer's instructions.
- 5.7.6 A tool shall never be left unattended in a place where it would be available to unauthorized persons.



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- 5.7.7 Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.
- 5.7.8 Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying-missile hazard on the other side.
- 5.7.9 Fasteners shall not be driven directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or one-fourth inch in steel.)
- 5.7.10 When fastening other materials, such as a 2- by 4-inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than 7/32-inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.
- 5.7.11 Fasteners shall not be driven through existing holes unless a positive guide is used to secure accurate alignment.
- 5.7.12 No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.
- 5.7.13 Tools shall not be used in an explosive or flammable atmosphere.
- 5.7.14 All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.
- 5.7.15 Disposal of unused cartridges – Please refer to manufacturers guidelines.

## **6.0 REFERENCES**

- 6.1 OSHA, SUBPART P, 1910.243(d), SUBPART I, 1926.302(e), 1926.21(b)(2)
- 6.2 ANSI A10.3-1970
- 6.3 PPL EU Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA, SUBPART P, 1910.243 (d), SUBPART I, 1926.302 (e)





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### 8.0 TRAINING / SAFETY

- 8.1 Train workers on the proper use of powder actuated tools and the wearing of personal protective equipment when operating or working around these types of tools.

### 9.0 COMPLIANCE AND EXCEPTIONS - N/A

### 10.0 ATTACHMENTS - N/A

### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	02/03/2017	Effective	03/01/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Revised training language.			

Rev	00	Date	07/30/2012	Effective	07/30/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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## **SP 53 SAFETY PROCEDURE SAFETY ALERTS, MEMOS AND INFORMATION COMMUNICATION PROCEDURE**

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### **1.0 PURPOSE/SCOPE**

- 1.1 This procedure provides direction for the preparation and distribution of safety alerts, memos and information documents. The components of this process include:
  - 1.1.1 Screening and evaluating safety event information for applicability to company employees and work processes.
  - 1.1.2 Determining the communication category most applicable to the safety event.
  - 1.1.3 Establishing the document format, distribution and criteria for follow-up to the safety event information communicated.

### **2.0 RESPONSIBILITY**

- 2.1 Safety Operations is responsible for:
  - 2.1.1 Identifying, collecting, and compiling safety event information for assessment and management review.
  - 2.1.2 Preparing a draft document to be sent to stakeholders and EU communications specialist for further review.
- 2.2 EU Communications:
  - 2.2.1 Composes the final document and has it reviewed and approved by appropriate staff and business lines.
  - 2.2.2 Issues the document using the appropriate distribution lists and other distribution methods used to distribute messages to PPL Electric Utilities employees.

### **3.0 APPLICABILITY**

- 3.1 This procedure provides direction for the preparation and distribution of safety alerts, memos and other safety-related information documents.

### **4.0 TERMS AND DEFINITIONS**

- 4.1 **Safety Event Information** - Knowledge or understanding gained by a new event or experience; i.e., operating/event experience. The experience may be:
  - 4.1.1 Positive or negative in nature;
  - 4.1.2 Significant in that it has real or assumed impact on safety;



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- 4.1.3 Valid in that it is technically correct; and
- 4.1.4 Applicable in that it identifies a specific design, process, or decision that reduces or limits the potential for failures and mishaps, or reinforces a positive result.
- 4.2 **Safety Alert** - An urgent notification designed to address unsafe or potentially unsafe practices or safety-related changes in work practices. It may also provide guidance about starting or stopping a work-related process. These communications must be shared with affected employees within 24 hours of the alert's release.
- 4.3 **Safety Memo** - A communication that is less urgent than an Alert and can be covered within 3 to 10 days (typically seven days) after it is distributed. These communications provide information about more common awareness-level safety issues, seasonal reminders and industry incidents.

## **5.0 MAIN BODY**

- 5.1 Develop, Issue, and Follow-up on Safety Event Information
  - 5.1.1 Members of the Safety Operations staff will review the Safety Event Information that is presented to them.
  - 5.1.2 Director and/or manager of Technical Development & Improvement (TDI) will determine the type of communication category the Safety Event Information falls into.
  - 5.1.3 Safety Operations will work with an EU communications specialist and develop a draft document.
  - 5.1.4 For Safety Alerts – the information may contain the following:
    - a. A statement indicating the functional areas impacted.
    - b. A short summary of the event(s) that led to the document's issuance.
    - c. Clearly-defined action statements and due dates for the completion of those actions.
    - d. Talking points for directors, managers, and supervisors to use to convey the importance of the actions required to be completed.
    - e. Specific information, background, or examples regarding risks specific to the work performed by each of the areas impacted by the communication.



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- f. The name, department, or title, and phone number of a dedicated point-of-contact (POC) who can clarify or explain the expectations.
- g. A number used to identify the alert, beginning with the year, i.e. 2018-1; 2018-2; 2018-3; and so on

5.1.5 For Safety Memo – the information may contain the following:

- a. Statement indicating the functional areas impacted.
- b. Short summary of the event(s) that led to the document's issuance.
- c. Clearly-defined action statements and due dates for the completion of those actions.
- d. Talking points for directors, managers, and supervisors to convey the importance of the actions required. It is important to ensure this information is part of the document.
- e. Specific information, background, or examples regarding risks specific to the work performed by each of the areas impacted by the communication.
- f. The name, department, or title, and phone number of at least one dedicated point-of-contact (POC) who can clarify or explain the expectations.
- g. A number used to identify the memo, beginning with the year, i.e. 2018-1; 2018-2; 2018-3; and so on

5.1.6 For Safety Information – the information may contain the following:

- a. Statement indicating the areas impacted.
- b. Short summary of the event(s) that led to the document's issuance.
- c. If necessary, talking points for Directors, Managers, and Supervisors to convey the importance of the actions required. Include this information as part of the document.
- d. Specific information, background, or examples regarding risks specific to the work performed by each of the Areas impacted by the communication.

5.1.7 When issuing the Safety Event Information the following steps will be followed:

- a. The business line and/or TD&I identifies a need for a Memo or Alert.



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- b. TD&I staff determines if it should be classified as a Memo or Alert.
- c. TD&I identifies the required audience with as much specificity as possibility (i.e. lineman; substation electricians; relay test).
- d. TD&I works with PPL EU communications to create a draft.
- e. The draft is reviewed internally by TD&I staff, including but not limited to safety, work methods, experience assessment, training.
- f. If a Memo or Alert changes a work process, the appropriate business line is the ultimate approver of the document and information it contains. For all other Memos and Alerts, TD&I is the ultimate approver.
- g. If deemed necessary, TD&I schedules and facilitates a conference call or conference calls with managers and foremen to solicit feedback and answer questions BEFORE distributing a Memo or Alert. (This is much more likely to occur with an Alert).
- h. TD&I or a member of EU communications distributes the Memo or Alert.
- i. EU Communications or TD&I will add the Memo or Alert to the TD&I SharePoint site/Foreman Communication Tool.
- j. If the alert or memo sent to employees includes a change in a rule, procedure, process or work method, the safety pro who originated the document must fill out a Management of Change document. (Template is located here: G:\TD&I - All\Management of Change
- k. The final document should be reviewed by an EU communications specialist before being uploaded into the "Management of Change" section of CCATs.

**5.1.8 Follow-up (Determined by TD&I director/manager)**

- a. It will be up to director/manager of TDI to decide whether the Safety Event information is tracked. If tracking is required, arrangements will be made with Technical Training to track employee reviews.
- b. If requested, a CCATS action item(s) to correct or communicate the event may be identified in Safety Event Information. Affected department(s) may be assigned specific actions to complete and completion of those actions will be tracked in CCATS by the affected department.



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- c. When appropriate, Safety Event Information documents will cite any procedures, programs, or processes that may be impacted and assign an action for the possible review and revision of those documents.
- d. When appropriate, Safety Event Information documents issued will assign an action to the Technical Training Department for the review against current training modules for possible revision.

**6.0 REFERENCES - N/A**

**7.0 REGULATORY REQUIREMENTS – N/A**

**8.0 TRAINING / SAFETY – N/A**

**9.0 COMPLIANCE AND EXCEPTIONS – N/A**

**10.0 ATTACHMENTS – N/A**

**11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

**12.0 RECORD OF REVISIONS**

<b>Rev</b>	02	<b>Date</b>	12/15/2017	<b>Effective</b>	01/01/2017
<b>Prepared by:</b>		Pat Lester, EU Communications Specialist			
<b>Reviewed by:</b>		Brian Matweecha, Manager-Safety Operations, and safety pro staff.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed and changed according to current policy/procedure for safety alerts, memos and information.			

<b>Rev</b>	01	<b>Date</b>	06/27/2017	<b>Effective</b>	06/27/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Pat Lester, EU Communications Specialist			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed and changed according to current policy/procedure for safety alerts, memos and information.			

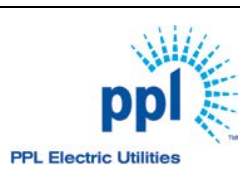


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<b>Rev</b>	00	<b>Date</b>	07/31/2012	<b>Effective</b>	07/31/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



	<p align="center"><b>SP 54</b>  <b>SAFETY PROCEDURE</b>  <b>USE OF ELECTRONIC COMMUNICATIONS</b>  <b>AND DATA DEVICES IN VEHICLES ON</b>  <b>COMPANY BUSINESS</b></p>	<p>0000-000-PR-8047  Custom ID: SP 54  Revision: 01  Effective Date: 04/01/2017  Page 1 of 4</p>
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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to provide guidelines to create a distraction-free and injury-free work environment with the respect to the use of electronic devices. Our workplace includes company and personal vehicles used on company business. The use of electronic devices could cause an employee to become distracted while driving and lead to an unplanned event.

## **2.0 RESPONSIBILITY**

- 2.1 Management is responsible to: Require their employees to work within the guidelines of this procedure.
- 2.2 Employees are responsible to: Work within the guidelines of this procedure.
- 2.3 Environmental Health & Safety (EHS): Provide guidance and assist departmental management in compliance of this procedure.

## **3.0 APPLICABILITY**

- 3.1 This procedure is to provide guidelines to create a distraction-free and injury-free work environment with the respect to the use of electronic devices

## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Electronic Devices** - Cell Phones, Handsets, Pagers, Portable Global Positioning Systems (GPS), Portable/Mounted Computers and other comparable electronic communication and data devices.
  - 4.1.1 Use of Electronic Devices includes: talking, dialing, checking voice mail, checking e-mail, entering data or reading text.



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## **5.0 MAIN BODY**

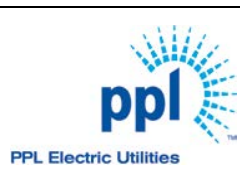
- 5.1 This procedure applies to the use of electronic devices in company vehicles and personal vehicles used for company business. PPL recognizes the value of these devices in providing an efficient and convenient method of communication and data transfer. However, use of these devices is distracting to the primary task of the operator of a vehicle, the safe operation of the vehicle. This distraction hazard increases the potential for an unplanned event and is unacceptable.
- 5.2 PPL believes that driving a vehicle is a task requiring full attention to constantly changing conditions. Vehicle operators shall adhere to the following guidelines:
- 5.2.1 Employees shall not use electronic devices while operating any motor vehicle on company business. Hands-free devices should be used only for critical calls.
- 5.2.2 Vehicle operators must assure that the position of these electronic devices does not obstruct or distract the operator of the moving vehicle. These devices must be stowed properly to assure that they do not interfere or obstruct the safe operation of the vehicle.
- 5.2.3 The safest and preferred method a vehicle operator uses electronic devices is to drive to a safe location and stop the vehicle prior to use.

**NOTE: The MOST important task for the Vehicle Operator is to stay focused on the task at hand, operating the vehicle in a safe manner.**

## **6.0 REFERENCES**

- 6.1 PPL EU Safety Rule Book
- 6.2 [National Highway Traffic Safety Administration](#)
- 6.3 [Cellular Based Communication Devices \(Corporate Policy 402\) - FAQ](#)

## **7.0 REGULATORY REQUIREMENTS – N/A**

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## 8.0 TRAINING / SAFETY– N/A

## 9.0 COMPLIANCE AND EXCEPTIONS – N/A

## 10.0 ATTACHMENTS – N/A

## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

Rev	01	Date	03/31/2017	Effective	04/01/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik			
<b>Approved by:</b>		Brian Matweecha, Safety Manager			
<b>Revision Comments:</b>		<ul style="list-style-type: none"> <li>Corrected proper numbering sequence in Section 5 (Main Body)</li> <li>Replaced the word <i>should</i> with <i>shall</i> in Section 5</li> <li>Changed the phrase <i>Electronic Communication and Data Devices to</i> <u>Electronic Devices</u> to correspond with the new safety rule</li> </ul>			

Rev	00	Date	07/31/2012	Effective	07/31/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



**SP 55**  
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**TICK BITE AND LYME DISEASE PREVENTION**

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## **1.0 PURPOSE/SCOPE**

- 1.1 Establish safety and health guidelines pertaining to the prevention of tick bites and the proper steps to take after discovering a tick embedded in the skin during or after performing work.
- 1.2 Educate employees about Lyme disease-carrying ticks and the signs and symptoms of Lyme disease.
- 1.3 Define the roles and responsibilities of employees and supervisors to prevent contact with ticks; and to respond to the discovery of an embedded tick.

## **2.0 RESPONSIBILITY**

### **2.1 Employee**

- 2.1.1 Each employee must take precautionary measures to prevent exposure to ticks. If an employee discovers a tick embedded in the skin after performing job-related tasks, the employee must report the event to a supervisor prior to the end of the work shift, or as soon as possible after discovery.

### **2.2 Supervisor**

- 2.2.1 Supervisors must ensure that:
  - a. The employees read the training material, this procedure, and understand the preventive steps affecting tick bites.
  - b. Employees are following the preventive steps in this procedure by conducting observations.
  - c. Approved repellent, Safety Data Sheets (SDS), and other preventive supplies are available to employees for use in pre-field preparation.
  - d. Employees have access to tick removal kits and are trained on proper use of the implements in removing any attached/embedded ticks.
  - e. First aid and medical care is provided when needed to aid with removal of the ticks.
  - f. The Tick Incident Report form is completed by the employee and the supervision when an attachment is reported.
  - g. Workers' compensation information and list of panel providers are available to affected employees upon reporting of an embedded tick in skin from exposure during work related tasks.



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- h. The incident is entered in CCATS (Corrective Action Tracking System).
- i. The EHS Professional and Health Services are notified that an incident was reported.

**2.3 Health Services**

- 2.3.1 If employee seeks additional treatment and a workers' compensation claim is initiated, follow up with safety operations, business line management, and the employee on the reported case.

**2.4 Safety Operations**

- 2.4.1 Review the completed incident report and, if needed, guide the supervisor to enter the information into CCATS. All reported tick-related events are entered into CCATS as a Department Level Evaluation (DLE) investigation.
- 2.4.2 Assist the supervisor with any training support or re-enforcements as needed.
- 2.4.3 Complete the Injury/Illness Consequence in CCATS and close out the entry. This ensures the event is logged on the OSHA log, as necessary.

**3.0 APPLICABILITY**

- 3.1 This procedure establishes safety and health guidelines pertaining to the prevention of tick bites, and to the proper steps taken after discovering a tick embedded in the skin during or after job-related work.

**4.0 TERMS AND DEFINITIONS**

- 4.1 **Center for Disease Control (CDC)** - The Centers for Disease Control and Prevention (CDC) is the national public health institute of the United States. The CDC is a federal agency under the Department of Health and Human Services. Its main goal is to protect public health and safety through the control and prevention of disease, injury, and disability.
- 4.2 **Lyme Disease** – A disease caused by the bacterium *Borrelia burgdorferi*, transmitted to humans by the bite of an infected tick.
- 4.3 **Permethrin** – A widely used insect repellent that does not harm Flame Retardant (FR) clothing.
- 4.4 **Corporate Corrective Action Tracking System (CCATS)** – Online database in which all safety event data is entered and maintained.



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## **5.0 BACKGROUND**

- 5.1 Working outdoors poses the unique hazard of potential exposure to tick bites. Ticks can carry pathogens that may lead to diseases such as Lyme disease. Some of the more common occupational outdoor activities that pose this hazard may include, but are not limited to, utility line work, outdoor construction activities, forestry, irrigation, brushwork, and others.
- 5.2 Outside of an occupational setting, ticks are also common on campgrounds and wooded areas where campers and hunters may frequent during all seasons. This procedure defines steps and guidelines for prevention of tick attachment and Lyme disease among work force at PPL who maybe exposed to this outdoor related occupational hazard during work.
- 5.3 The procedure defines roles for Employees, Supervisors, Health Services, and Business Line Safety Organizations in properly addressing Tick Bite and Lyme Disease prevention issues as they arise.
- 5.4 About Lyme Disease
- 5.4.1 Ticks are prevalent across the region and precautions at work and home are advised in preventing tick bites. Center for Disease Control (CDC) provides a number of resources and tools offering education and preventive steps against tick bites.
- 5.4.2 Lyme disease is a result of bacterial infection (*Borrelia burgdorferi*) through the bite of an infected immature blacklegged tick. Also known as the deer tick (*Ixodes scapularis*) this tick is common to the northeast. The immature tick is almost 2 mm in size and can attach in hard to see places and skin folds such as armpits, groin, and scalp areas. Both adult and immature ticks can carry the organism but adults are easier to discover due to their size.
- 5.4.3 The bacterium must be transmitted from an infected tick to the blood of the host it attaches to in order for the host to become infected. CDC reports that transmission mostly takes place 36-48 hours after attachment of an infected tick. Thus, checking one's body after being outdoors and frequently during the outdoor activities is the most effective measure in avoiding prolonged attachment of potentially infected tick.
- 5.4.4 Symptoms associated with a transmission of disease may include a red rash that expands within 3 to 30 days after a bite from an infected tick. This rash is also known as Erythema Migrans or EM and may appear like a "bull's eye" on the bite site or other lesions on the body. Other symptoms, if not treated, may include paralysis or loss of muscle tone in the face, swelling of the larger joints, fatigue, headache, stiffness in the neck due to inflammation of the spinal cord, dizziness, and other complications.





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## **6.0 MAIN BODY**

Prevention is the best protection against Lyme disease. Follow the steps below to ensure protection against tick exposure:

### **6.1 Pre-field Work Precautions:**

- 6.1.1 Employees are required to adjust their work clothing and take the following steps before initiating fieldwork:
- 6.1.2 Wear long pants, long sleeves, and long socks to keep ticks off the skin.
- 6.1.3 Light-colored clothing is encouraged, as it will help employee's spot ticks more easily.
  - a. Secure hems and edges of sleeves/pants to delay tick access to skin through such openings.
  - b. Tuck pant legs into socks or boots.
  - c. Tuck shirts inside pants.
- 6.1.4 If outside for an extended period, tape the area where pants and socks meet to prevent ticks from crawling under clothing.
- 6.1.6 Contact your supervisor or Safety Professional with any questions or concerns that you may have before using the product.
- 6.1.7 For Arc Flash/FR clothing use the "Rainbow Tick and Mosquito Repellent" (contains Prematherin) and avoid use of DEET product on the garment.
- 6.1.8 For **non**-Arc Flash/FR clothing, use of DEET repellent. Be sure to read the Safety Data Sheet and product use instruction fully before use.
- 6.1.9 Avoid skin contact or spraying between clothing and your skin where possible.



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6.2 During and Post-field work precautions

- 6.2.1 Check your clothing throughout the workday for ticks. Brush off any ticks that you may find.
- 6.2.2 Check your body after fieldwork and at least daily for ticks.
- 6.2.3 Check the skin folds (i.e. groin, armpit, other hidden areas), scalp, and hair.
- 6.2.4 Shower as soon as possible (preferably within 2 hours) after your shift if you worked outdoors.
- 6.2.5 Clean the clothes worn outdoors. Follow care instructions for ARC Flash/FR clothing. Hot clothes dryers are effective, but use as per ARC Flash/FR clothing care guidelines from manufacturer where applicable.

6.3 Reporting of discovered attached tick

- 6.3.1 It is not required to report 'unattached' ticks.
- 6.3.2 Employees are required to report occupational related attached tick incidents to their supervision immediately and before the end of the workday during which it occurs. If an employee discovers an embedded tick after their work shift and were exposed during working hours, they are expected to contact supervision as soon as discovery is made.

6.4 Once reported—

- 6.4.1 Employees will be asked to seek first aid treatment on site (if available) or as directed by the supervisor. They must complete the first page of Tick Incident Report (Attachment 1 to this document) using a black or blue ink pen.
- 6.4.2 Employee must receive the Workers' Compensation Employee Notification letter and will sign the receipt to acknowledge receiving the information.
- 6.4.3 The Supervisor will complete the second page of the Tick Incident Report and ensure the incident is entered in CCATS, then scan the completed incident form (pages 1 and 2) and attach it to the CCATS incident electronically.

6.5 Removing the tick - The following guidelines can be used if access to first aid or medical treatment is not immediately available to employees:

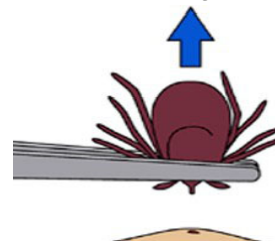
- 6.5.1 Do not use any products to remove the tick (i.e. Vaseline, nail polish, hot match, paint, etc.). Use the company provided Tick Removal kit CAT ID # 916278.



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- 6.5.2 Grasp the tick with fine tip tweezers as close to your skin as possible. This means that you will grasp the tick around the head/mouth area. Exercise care not to squeeze the engorged body of the tick, since doing so may increase the chance of infection. Pull away from skin with steady straight motion and pressure until the tick is removed. Avoid twisting and jerking motions and this may lead to incomplete removal of the tick. Follow the diagram for the proper technique to remove a tick using tweezers:



- 6.5.3 Clean the skin with antiseptic wash, rubbing alcohol, or soap and water after removal.
- 6.5.4 If parts are left, wash the area with antiseptic, rubbing alcohol, or soap and water.


- 6.5.5 Monitor the attachment site and seek medical attention as needed.

6.6 Testing the tick is no longer necessary

- 6.6.1 It is no longer necessary to have the embedded tick tested. Testing of a tick can produce a false negative that can be misleading and can cause delays in an employee receiving treatment. Additionally, testing of the tick cannot confirm if “transmission” of the bacterium from the tick to an individual has taken place even if the tick tests positive. Occupational tick bite incidents will have to be considered on a case-by-case basis to ensure the best treatment plan for affected employees.

6.7 Notify Supervisor

- 6.7.1 Supervisor and the employee complete the Tick Incident Report (TIR). Refer to Attachment 1.
- 6.7.2 Supervisor will provide to the affected employee the Workers' Compensation Employee Notification form and a listing of panel providers.
- 6.7.3 Scan and attach a copy of the TIR into CCATS.
- 6.7.4 Request medical attention for employee, if necessary.

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## 7.0 REFERENCES

- 7.1 [Centers for Disease Control and Prevention \(CDC\)](#)
- 7.2 [Preventing Tick Bites on People](#)

## 8.0 REGULATORY REQUIREMENTS – N/A

## 9.0 TRAINING / SAFETY – N/A

## 10.0 COMPLIANCE AND EXCEPTIONS – N/A

## 11.0 ATTACHMENTS


- 11.1 Attachment 1 (Tick Incident Report (TIR) Form)

## 12.0 RECORD RETENTION


- 12.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 12.2 This document shall be reviewed every 5 years by Safety Operations.
- 12.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 13.0 RECORD OF REVISIONS

Rev	01	Date	06/27/2017	Effective	06/27/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Pros: Jared Dyer, Brian Kostik, Elizabeth McKay, Dalton Shorts, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed and approved with changes to Section 12.2 (changed from 3 years to 5 years for next review).			

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<b>Rev</b>	00	<b>Date</b>	05/24/2013	<b>Effective</b>	05/29/2013
<b>Prepared by:</b>	Deborah A. Sweinhart				
<b>Reviewed by:</b>	Adam Frederick, Richard Horan, Jeff Monsell, Jacque Creamer, Brian Kostik				
<b>Approved by:</b>	Barry Downes				
<b>Revision Comments:</b>	Converted from General Safety Procedure to Electric Utilities Safety Procedure				

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### ATTACHMENT 1 -- TICK INCIDENT REPORT (TIR) FORM

1	Date of Report		Time of Report	
2	Employee Name (Print)		Employee ID	
3	Date Tick Discovered		Time Tick Discovered	
4	Last worked shift start date and time (if not on the same date that tick was discovered):			
5	When do you think the tick might have gotten on you and was attached (i.e. job description, location, etc):			
6	<b>Circle Yes or No below to indicate the pre-field work precautions taken</b>			
a	Used repellent?		Yes	No
b	Name of repellent			
c	Did you have and read the MSDS?		Yes	No
d	Used garment treated with "Rainbow" (Permethrin for ARC Flash /FR clothing) or DEET?		Yes	No
e	Used light color clothing?		Yes	No
f	Secured hems and edges of sleeves/pants to delay tick access to your skin through such openings?		Yes	No
7	Check all Post-field steps that you completed?			
a	Did you check your body after last shift?		Yes	No
b	Did you notice any ticks at that time?		Yes	No
c	Did you check your body throughout the shift of incident for ticks:		Yes	No
d	What was the last time you checked your body before the time tick was discovered?			
e	Did you check the skin folds (i.e. groin, armpit, other hidden areas), scalp, and hair?		Yes	No
f	Did you clean your clothes before you used them at the beginning of shift of incident?		Yes	No
8	Describe how, when, and where you removed the tick			
9	Describe how you cleaned the area after the tick was removed		Description of bite site after cleaning	
		<input type="checkbox"/> Redness <input type="checkbox"/> Swelling <input type="checkbox"/> No visible signs of irritation		

**INFORMATION BELOW TO BE FILLED OUT BY SUPERVISOR**

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1	Supervisor Name			
2	Supervisor Employee ID			
3	Was incident reported before the end of the shift		Yes	No
4	Was incident during non-schedule hours:		Yes	No
5	If yes, was supervision notified by employee on next working day?		Yes	No
6	Entered incident in CATS		Yes	No
7	Supervisor Signature	Date Received		

**Form Instructions**

- Employee completes 1<sup>st</sup> page using a black or blue ink pen
- Supervisor completes 2<sup>nd</sup> page using black or blue ink pen
- Scan the form and attach to the CCATS incident panel
- Forward an electronic copy to Senior Staff Health Specialist



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## **1.0 PURPOSE/SCOPE**

- 1.1. It is PPL Electric Utilities' intent to comply fully with the mandatory **Chemical Facility Anti-Terrorism Standards (CFATS)** promulgated by the **Department of Homeland Security (DHS)** and maintain a strong internal **CFATS** compliance program which includes the protection of **CFATS** sensitive information, called **Chemical-Terrorism Vulnerability Information (CVI)**.
- 1.2. Management must fully comply with **CFATS** and maintain a strong internal compliance program for its facilities (as defined below).
- 1.3. This Procedure is designed to ensure that Appendix A **Chemicals of Interest (COI)** on the properties of PPL Electric Utilities remain, to the extent practicable, below their corresponding **Screening Threshold Quantities (STQs)** as designated in Appendix A and that no PPL Electric Utility facility will be a **CFATS covered facility**.
- 1.4. If quantities of **COI** meet or exceed the corresponding **STQ** at a **facility**, this procedure is designed to ensure compliance with **CFATS**.
  - 1.4.1. **Management** shall comply with the corporate **Inventory Management System** to ensure ongoing, prompt and accurate identification and reporting at their facilities of all **CFATS** Appendix A - **Chemicals of Interest (COI)**. Among other things, each **manager** shall ensure that the **facility** submits a **Top Screen** as applicable to **DHS** within 60 days of possession of a **COI** at or above the corresponding **STQ**.
- 1.5. Contractors working on PPL Electric Utilities property are responsible for complying with **CFATS**. Independent contractors shall be responsible for signing an agreement that includes provisions approved by PPL's Office of General Counsel relating to **CFATS** compliance.
- 1.6. This procedure is intended to apply to all facilities that are owned and/or operated by PPL Electric Utilities and to contractors, vendors, or consultants utilized. Certain PPL Electric Utilities facilities may be exempt from obligations contained this procedure, but only with written approval from Manager – PPL Electric Utilities Environmental, Health, and Safety. These facilities will continue to be responsible for continued compliance with **CFATS**, as appropriate.
- 1.7. This procedure defines:
  - 1.7.1 Department of Homeland Security **CFATS** requirements and corporate compliance policy.
  - 1.7.2 **CFATS** compliance process for **business lines** to utilize for identification, storage and handling of **Chemicals of Interest (COIs)** to help ensure compliance with **CFATS** requirements.



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- 1.7.3 Specify documents needed for reporting and recording of **COIs** brought on to the property of PPL Electric Utilities
- 1.7.4 How records of **COI** inventories are maintained, and who is authorized to access these records.
- 1.7.5 Roles and responsibilities of **managers** and their personnel to ensure that quantities of **COI** are properly identified inventoried and reported, as defined in **CFATS** and in this procedure.
- 1.7.6 Specify the “Quarterly Chemical Facility Anti-Terrorism Standards Screening Threshold Quantities Consent Sheet”, attached as Appendix C, to indicate review of inventories of COI by the appropriate CFATS Compliance Manager and to certify compliance with CFATS.

## **2.0 RESPONSIBILITY**

### **2.1 Safety Operations**

- 2.1.1 Serve as the owner, implement this procedure, and provide leadership for the company in maintaining Chemical-Terrorism Vulnerability Information (CVI) protected documentation.
- 2.1.2 Work with business lines CFATS Compliance Managers to:
  - a. Help ensure business lines use the Inventory Management System or alternative inventory process) approved by Manager – Safety Operations.
  - b. Submit, revise and/or resubmit the Top Screen for the facility within 60 days of possession of a chemical of interest (COI) at or above the corresponding screening threshold quantity (STQ) – Appendix A or making a material modification.
- 2.1.3 Periodically request Corporate Audit Services, to conduct an audit assessment of PPL’s and its business lines’ compliance with CFATS.
- 2.1.4 Notify the PPL Office of General Counsel (OGC) concerning potential noncompliance with CFATS and initiate discussions with business line senior management regarding self-reporting the potential noncompliance to DHS and mitigating the noncompliance.
- 2.1.5 Request appropriate personnel from each facility and/or each business line, to execute and provide a completed copy of Appendix C (Quarterly Screening Threshold Quantities Consent Sheet).
- 2.1.6 Maintain the CFATS Compliance Database in accordance with CFATS requirements for management and handling



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- 2.1.7 Assign a **CFATS Compliance Manager** within who is a **CVI Authorized User**.
- 2.1.8 Assign one person, who is a **CVI Authorized User**, as the responsible manager for each **facility** who is responsible for **CFATS** compliance at such **facility**.
- 2.1.9 Maintain a procedure to ensure PPL Electric Utilities compliance with **CFATS** either pursuant to the procedure established herein, including Appendix B – **Chemical-Terrorism Vulnerability Information (CVI)** or an alternative procedure approved by Manager – PPL Electric Utilities Environmental, Health, and Safety.  
  
The procedures to be followed must include methods and processes to inventory Appendix A **Chemicals of Interest (COIs)** and maintain quantities of **COIs** below their corresponding **Screening Threshold Quantities (STQs)**. Such procedures shall include (but not be limited to) the following:
  - a. Ensure that no **COIs** will be procured outside of the **Inventory Management System** nor will **COIs** be purchased via the PPL Corporate Credit Card.
  - b. Ensure that purchase and possession of **COIs** comply with the Hazard Communication & Chemical Risk Review Process.
  - c. Comply with reporting obligations as specified in **CFATS** and Section 7 of this procedure.
  - d. Ensure that independent contractors are trained and comply with **CFATS** in accordance with the Contractor Safety procedure and the applicable provisions of these procedures.
- 2.1.10 Request the approval of all new chemicals in accordance with Hazard Communication & Chemical Risk Review Process. This includes using the **Inventory Management System**
- 2.1.11 Communicate and train as appropriate employees at their facilities who may have compliance obligations under **CFATS** and this procedure.
- 2.1.12 Conduct quarterly self-assessments in accordance with Section 8 of this procedure and submit to Safety Operations, each quarter, completed Appendix C to this procedure (Quarterly Screening Threshold Quantities Consent Sheet).

**2.2 CFATS Compliance Manager**

- 2.2.1 Comply with this procedure.



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- 2.2.2 Successfully complete the required training to attain **Chemical-Terrorism Vulnerability Information (CVI) Authorized User** certification.
  - 2.2.3 Assist with developing a procedure for CFATS compliance.
  - 2.2.4 Coordinate **CFATS** compliance, including internal quarterly self-assessments, to ensure procedural compliance.
  - 2.2.5 Work with Manager – Safety Operations to prepare and submit **Top Screen** and revise **Top Screen** within 60 days of a material modification.
  - 2.2.6 Report, immediately, to Manager – Safety Operations all matters that might be deemed relevant information.
  - 2.2.7 Integrate audit recommendations for improvement into this procedure
- 2.3 Supply Chain
- 2.3.1 Serve as the owner of the PPL Materials Management System.
  - 2.3.2 Maintain the safeguards that are put in place to ensure that PPL Electric Utilities does not possess or plan to possess Appendix A **Chemicals of Interest (COIs)** at quantities above their corresponding **Screening Threshold Quantity (STQ)**.
  - 2.3.3 Ensure that any changes made to the Material Management System will maintain the internal safeguards for **CFATS** compliance.
- 2.4 Employees
- 2.4.1 Comply with this procedure. Violations of this general safety procedure may constitute a violation of PPL's Standard of Conduct and Integrity and, if necessary, will be handled in accordance with PPL's Responsible Behavior Program.
  - 2.4.2 Undergo CVI training as appropriate.

### **3.0 APPLICABILITY**

- 3.1 It is PPL Electric Utilities' intent to comply fully with the mandatory Chemical Facility Anti-Terrorism Standards (CFATS) promulgated by the Department of Homeland Security (DHS) and maintain a strong internal CFATS compliance program which includes the protection of CFATS sensitive information, called Chemical-Terrorism Vulnerability Information (CVI).



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## **4.0 TERMS AND DEFINITIONS**

- 4.1 **Chemicals of Interest (COI)** – a chemical listed in Appendix A (6 CFR Part 27, Department of Homeland Security Chemical of Interest) to the CFATS rule that may trigger registration and reporting obligations under CFATS. Any facility that possesses, or plans to possess, Appendix A COI in a quantity that meets or exceeds the corresponding Screening Threshold Quantities (STQs) as identified in Appendix A, and is not subject to any CFATS exemption, provided in the CFATS rule (6 CFR Part 27) must use the Chemical Security Assessment Tool (CSAT) to register and submit a Top Screen to Department of Homeland Security.
- 4.2 **Chemical Facility Anti-Terrorism Standards (CFATS)** – regulations promulgated by DHS pursuant to Section 550 of the Homeland Security Appropriations Act of 2007 (P.L. 107-295) (the Act). In the Act, Congress gave DHS regulatory authority over security at high-risk facilities and instructed DHS to require all high-risk facilities to complete Security Vulnerability Assessment (SVA), develop site security plans (SSPs) and implement protective measures as necessary to meet DHS-promulgated risk-based performance standards (RBPS).
- 4.3 **CFATS Compliance Database** – information relating to CFATS including, but not limited to, meeting minutes which include Chemical-Terrorism Vulnerability Information (CVI), copies of the CVI Authorized User certificates, completed self-assessment reports, correspondence containing CFATS information, CVI Tracking Logs (Appendix C), and CSAT Top Screens, Security Vulnerability Assessment (SVA) and Site Security Plans (SSPs). The CFATS Compliance Database is owned by the Corporate Safety Department of PPL Services Corporation. Only CVI Authorized Users with a need to know the information may be provided access to the CFATS Compliance Database or any CVI.
- 4.4 **CFATS Compliance Manager** – is a manager designated by each business line to assume authority for overseeing CFATS compliance for that entity or one or more of its facilities. A business line that owns a shared facility shall assign a single Compliance Manager for the shared facility. The designated CFATS Compliance Manager's role is to coordinate his or her business line's implementation of CFATS compliance in accordance with the procedure established herein. The CFATS Compliance Manager is responsible for completing and submitting to Safety Operations, as appropriate, the Quarterly Chemical Facility Anti-Terrorism Standards Screening Threshold Quantities Sheet. Appendix C –Chemical Facility Anti-Terrorism Standards.
- 4.5 **Chemical Security Assessment Tool (CSAT)** – the DHS on-line system for collecting and analyzing key data from facilities to help DHS identify facilities that present a high level of risk, CSAT includes a suite of four applications, including User Registration, Top-Screen, Security Vulnerability Assessment (SVA) and Site Security Plan (SSP). Only Chemical-Terrorism Vulnerability Information (CVI) Authorized-Users with a need to know the information may access the CSAT.



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- 4.6 **Chemical-Terrorism Vulnerability Information (CVI)** – information, whether written, verbal, electronic, digital, or otherwise, that is developed and/or submitted by a facility to DHS in accordance with CFATS, including the Top Screen, the Security Vulnerability Assessment (SVA), the Site Security Plan (SSP) and the determination by DHS that a facility is high risk. CVI must be handled and protected in accordance with CFATS requirements. Only information developed, submitted and maintained in order to comply with CFATS CVI. The DHS confirmation letter indicating that a facility is “not regulated” or is “not a high risk” is not CVI. See Appendix B – Chemical-Terrorism Vulnerability Information.
- 4.7 **Covered Facility** – a facility preliminarily or finally determined by DHS to be high risk. DHS will assign each high-risk facility a tier level, ranging from the highest risk at Tier 1- to the lowest risk at Tier 4).
- 4.8 **CVI Authorized User** – a person who is trained to handle and safeguard CVI in accordance with CFATS requirements and is in possession of a CVI Authorized User Number. In order to gain access to CVI, a CVI Authorized User must also demonstrate a “**need to know**” the information. The following is a link to DHS on-line [CVI User Training](#).
- 4.9 **Department of Homeland Security (DHS)** – is a cabinet department of the United States federal government with the primary responsibility of protecting the territory of the United States from terrorist attacks and responding to natural disasters.
- 4.10 **Facility** – an establishment owned or operated by PPL or a business line that possesses, or plans to possess, at any relevant point in time, a quantity of a COI listed in CFATS Appendix A. The term includes, but is not limited to, PPL or business line buildings, offices, distribution centers, storage units, generating stations other electric facilities and real property. Some examples of facilities include the Montour Plant, Buxmont Service Center, Quarryville Service Center and General Office Tower Building.
- 4.11 **Inventory Management System** – a system owned by PPL Supply Chain’s Logistic Services Department, which is designed to help facilities track all chemical substances identified by the DHS as “Chemical of Interest” (COIs).
- 4.12 **Need to Know** – determination, in accordance with CFATS, that an individual, including PPL and its subsidiaries’ personnel, a government agent or a third-party, requires access to Chemical -Terrorism Vulnerability Information (CVI) in order to carry out facility security activities. Further guidance on determining whether an individual has a need to know CVI information is provided in Appendix B. Completion of DHS on-line training does not make any determination regarding a “need to know” CVI. The holder of CVI or a designated official must make this decision about the proposed recipient of CVI each time a request for access to CVI is made.





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- 4.13 **Screening Threshold Quantity (STQ)** – the quantity of a COI which triggers a facility's obligation to register and complete and submit a CSAT Top Screen. Each COI and the corresponding STQ is listed in Appendix A.
- 4.14 **Security Vulnerability Assessment (SVA)** –CSAT tool submitted to DHS for a facility to identify security hazards and threats to the facility and to evaluate security countermeasures and vulnerabilities. The facility's SVA must be submitted 90 days after receiving a DHS high risk determination letter, or by a date indicated by the DHS letter, and cover the COI and security issue(s) identified in the letter and must take into account the critical assets at the facility and vulnerabilities based on DHS created scenarios. SVAs developed by PPL Electric Utilities for purposes other than CFATS are not subject to this procedure.
- 4.15 **Site Security Plan (SSP)** – the CSAT tool submitted to DHS by a high- risk facility that describes existing and, if the facility chooses, planned and proposed security measures which address the facility's identified vulnerabilities and reduce the facility's risk profile. A facility must complete an SSP after it receives a Final Notification Letter from DHS designating it a high-risk facility. SSPs require DHS approval through field inspections and document reviews. SPPs developed by PPL Electric Utilities for purposes other than CFATS are not subject to this procedure.
- 4.16 **Top Screen** – an on-line screening tool submitted to DHS for a facility which provides information regarding the chemical(s) of interest (COIs) manufactured, processed, used, stored at, or distributed by the facility to help DHS determine whether the facility is a "high-risk" facility. A Top Screen is due from a facility that possesses or plans to possess a COI at or above its corresponding screening threshold quantity (STQ) as listed in Appendix A. A facility that possesses a COI in an amount at or above the applicable screening threshold quantity (STQ) has 60 days to complete and submit a Top Screen to DHS. Additionally, all covered facilities must update their Top Screens periodically according to the schedule specified in CFATS. The submission schedule varies by tier. After review of the Top Screen, DHS may designate a facility as "preliminary high-risk" in one of four risk-based tiers, ranging from high (Tier 1) to low (Tier 4) risk. A new Top Screen is also due within 60 days of a covered facility making a "material modification" (as defined below) to its product portfolio, personnel, operations or site. A "material modification" may include changes to a covered facility's chemical inventories (including the presence of a new chemical to a level at or above the STQ or the increase of an existing chemical to a level at or above the STQ), or certain changes to a covered facility's product portfolio, personnel, operations or site. **DHS** also requires covered facilities to conduct an annual audit of its compliance with its Site Security Plan (SSPs).



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## **5.0 MAIN BODY**

### **5.1 Regulatory Enforcement**

- 5.1.1 If **DHS** determines that a **facility** is in violation of **CFATS**, it may assess against the owner or operator of the **facility** daily [civil penalties](#) for each continuing violation or stop work orders.
- 5.1.2 Administrative compliance orders for egregious violations may contain specific requirements, up to and including orders to cease all operations at a **facility**.
- 5.1.3 Noncompliance may be determined to include a **facility's** refusal to complete a **Top Screen**, for failure to allow an inspection, or for failure to update a **Site Security Plan (SSP)**.

### **5.2 Disclosure Requirements**

- 5.2.1 If, after receiving information that a **facility** undertook activity to its operations or site that may trigger reporting requirements under **CFATS**, the Manager – Safety Operations will complete and submit, or as appropriate will work with the appropriate **business line** to complete and submit, a **Top Screen**, a revised **Top Screen**, or other appropriate documentation to **DHS** within 60 days of the activity or as soon as practicable.
- 5.2.2 Information that could be deemed to trigger **CFATS** reporting requirements include:
  - a. Adding a new Appendix A **Chemicals of Interest (COI)** in a quantity that meets or exceeds the corresponding **screening threshold quantity (STQ)**.
  - b. Increasing the quantity of an existing chemical which was below the **STQ**, but now is at or above the **STQ**.
  - c. Removing a **COI** from the site, or decreasing the quantity of a **COI** below the **STQ**.
  - d. Selling or transferring a **facility** or a process unit within a **facility**.
  - e. New facility construction, merger, acquisition, or divestiture of a **facility** that manufactures, uses, stores or distributes **COIs** above a specified quantity listed on Appendix A.
  - f. Modifying security operations, policies, practices, or programs (that are different than previously communicated to **DHS**). If this occurs;





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PPL must complete and submit revisions to Manager – Safety Operations.

5.2.3 If a **facility** has information regarding the unauthorized disclosure of CVI, Manager-Safety Operations must immediately report the disclosure to the **Department of Homeland Security/CSAT** Helpdesk at 866-323-2957 or **CSAT@DHS.GOV** and to the PPL Office of General Counsel.

5.3 Self-Assessment Process

5.3.1 **CFATS Compliance Managers** will complete a Quarterly Self-Assessment including review of Quartering Screening Threshold Quantities Consent Sheets (Appendix C to GSP 56) of each **facility** within their respective **business lines** to verify Appendix A's **Chemicals of Interest (COIs)/ Screening Threshold Quantities (STQs)** are not met or exceeded.

5.4 Recordkeeping

5.4.1 **CFATS** requires a **facility** to retain copies of Top-Screens, **Security Vulnerability Assessments (SVA)**, Site Security Plans and all related correspondence with **DHS** for at least six years.

5.4.2 **CFATS** requires facilities to retain copies of all training materials, internal audits and drills for at least three years.

5.4.3 Corporate records generated by the PPL's **CFATS** program that are not CVI, shall be stored in the corporate file system and maintained in accordance with the corporate Records Retention Schedule.

5.4.4 Corporate records generated by this process that are CVI, including, but not limited to **Top Screens, SVAs** and **SSPs** and related **DHS** correspondence, shall be stored in the **CFATS Compliance Database**.

**6.0 REFERENCES – N/A**

**7.0 REGULATORY REQUIREMENTS**

7.1 [Homeland Security: Chemical Facility Anti-Terrorism Standards \(CFATS\)](#)

**8.0 TRAINING / SAFETY – N/A**

**9.0 COMPLIANCE AND EXCEPTIONS - N/A**



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## 10.0 ATTACHMENTS

- 10.1 [Homeland Security Appendix A: Chemicals of Interest \(COI\) List](#)
- 10.2 ATTACHMENT A - Chemical-Terrorism Vulnerability Information (CVI)
- 10.3 ATTACHMENT B - Quarterly Screening Threshold Quantities Consent Sheet

## 11.0 RECORDS RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every five years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD OF REVISIONS

<b>Rev</b>	01	<b>Date</b>	07/27/2017	<b>Effective</b>	07/27/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Dalton Shorts, Steve Mondschein, Elizabeth McKay, Brian Kostik, and Jared Dyer.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Reviewed to ensure this procedure was in line with Records Retention Policy. Repaired all broken links to websites.			

<b>Rev</b>	00	<b>Date</b>	06/07/2012	<b>Effective</b>	06/07/2012
<b>Prepared by:</b>		Dave Hughes			
<b>Reviewed by:</b>		Adam Frederick, Dave Hughes, Rich Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from GSP to Electric Utilities Ownership			



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**ATTACHMENT A - Classification of Chemical-Terrorism Vulnerability**

**Chemical Facility Anti-Terrorism  
 Standards (CFATS)**

**Department of Homeland Security**

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**SAFETY PROCEDURE**  
**CHEMICAL-TERRORISM VULNERABILITY**  
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## **1. Classification of Chemical-Terrorism Vulnerability Information (CVI)**

As described in PPL Electric Utilities Chemical Facility Anti-Terrorism (PEUCFATS) procedure, certain information created under the Chemical Facility Anti-Terrorism (CFATS) program is Chemical-Terrorism Vulnerability Information (CVI), subject to protections as sensitive information under CFATS, and accessible only to a CFATS CVI Authorized User with a need to know the information.

- 1.1. The CFATS Compliance Manager, designated by management in accordance with PEUCFATS procedure, must classify information in his or her facility (ies) as CVI in accordance with the CFATS definition of CVI and in accordance with PEUCFATS procedure.
- 1.2. PPL Corporate Policy 404, Information Classification and Handling, classifies information as Confidential, Internal Use and Public. CP 404 further classifies Confidential Information as Privileged, Proprietary, Personal, Safeguards Information (Nuclear), Critical Infrastructure Information (CII) and Chemical-terrorism Vulnerability Information (CVI).
- 1.3. The CFATS protective measures for handling, marking and distributing CVI shall be applied to all information designated as CVI by the CFATS Compliance Manager.

## **2. Scope**

Information that a facility develops in accordance with other statutory or regulatory obligations, or information that pre-dates the Chemical Facility Anti-Terrorism Standards (CFATS), is not Chemical-Terrorism Vulnerability Information (CVI).

- 2.1. Other statutory or regulatory information: Information that a facility developed or develops under regulatory regimes unrelated to CFATS is not CVI. This is so even if this information is later incorporated into a separate document relating to compliance with CFATS, making the latter document CVI.
- 2.2. Pre-existing information: Other than the CSAT Top Screen (which is considered CVI), documents that a facility created prior to DHS determining the facility to be "high risk" under CFATS - i.e., documents not developed or submitted pursuant to CFATS are not CVI. CVI requirements are not retroactive, and a facility need not go back through its pre-existing files to mark already existing documents. Records that a facility updates or



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creates after DHS determines the facility to be high risk are CVI and subject to the CFATS CVI requirements.

- 2.3. Information, not listed in CFATS as CVI, that a facility develops for its own business purposes is not CVI.

### **3. Identification and Designation of Specific Documentation as CVI**

- 3.1. CFATS Compliance Managers shall identify and designate specific documentation as CVI in accordance with CFATS and Appendix to PEUCFATS procedure

### **4. Requests for Determination of CVI**

- 4.1. Access to material containing CVI requires that the recipient have a valid “need to know” the information.
- 4.2. The holder of CVI must ensure that the intended recipient is a CVI Authorized User.
- 4.3. PPL Electric Utilities personnel and third parties (e.g., outside counsel and consultants) requesting CVI must:
  - be an “Authorized User;”
  - understand safeguarding requirements of CVI and complete DHS on-line training;
  - mark all information as CVI as outlined in this policy.
- 4.4. Any request for access to CVI by federal, state and local government employees must be provided to Manager – Corporate Safety & Health who will verify the requestor’s authorization and determine the requestor’s need to know the CVI.
- 4.5. If a facility or a business line develops information that could, in its judgment, compromise facility security if publicly disclosed, and that information is not listed as CVI under CFATS, the Manager – PPL Electric Utilities Environmental, Health, and Safety shall request a CVI designation from DHS under CFATS.
  - Manager – PPL Electric Utilities Environmental, Health, and Safety shall send the information in question to DHS marked as CVI. Until DHS makes a final determination, DHS and the facility will handle and protect the information as though it is CVI.



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- DHS will communicate its final determination to the Manager – PPL Electric Utilities Environmental, Health, and Safety. DHS will maintain a record of each request for CVI designation, including the date, subject or title of the request, and a synopsis of the information.
- Other federal, state, and local government agencies do not have the authority to designate CVI information independently obtained from chemical facilities under other regulatory programs.

## **5. Authorized CVI Users and Need to Know CVI**

- 5.1. Access to CVI information requires that an individual has a “need to know” the information and is a CVI Authorized User.
- 5.2. CFATS Compliance Managers shall document in writing the list of individuals in their business lines authorized to make a determination that specific documentation is CVI.
- 5.3. A person has the need to know CVI information when:
  - 5.3.1. that person requires access to specific CVI to carry out chemical facility security activities approved, accepted, funded, recommended, or directed by DHS;
  - 5.3.2. that person needs the CVI to receive training to carry out chemical facility security activities approved, accepted, funded, recommended, or directed by DHS;
  - 5.3.3. that person needs the CVI to supervise or otherwise manage individuals carrying out chemical facility security activities approved, accepted, funded, recommended, or directed by the DHS;
  - 5.3.4. that person needs the CVI to provide technical or legal advice to a covered person, who has a need to know that CVI, regarding chemical facility security requirements of Federal law, or
  - 5.3.5. when DHS determines that access by that person to specific information is required under CFATS in the course of judicial or administrative proceedings.
- 5.4. In addition, as provided by CFATS –
  - A Federal employee has a need to know CVI information if access to the information is necessary for performance of the employee’s official duties.



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- A contractor acting in the performance of a contract or grant from DHS has a need to know CVI information if access to the information is necessary to performance of the contract or grant.
- Notwithstanding the other provisions of the rules, DHS may determine that only specific persons or classes of persons have a need to know specific CVI.
- Nothing shall prevent DHS from determining, in its discretion, that a person or class of persons not otherwise listed above has a need to know CVI in a particular circumstance.

## **6. Disclosure/Marking of CVI and Maintenance of CVI Tracking Log**

- 6.1. CVI may only be disclosed to a CVI Authorized User with a need to know.
- 6.2. A need to know should be assessed on a case-by-case basis (including an individualized assessment of the documents involved).
- 6.3. A covered person in possession of CVI should take reasonable steps to confirm that any individual seeking access to CVI is a CVI Authorized User and has a need to know.
- 6.4. Manager – PPL Electric Utilities Environmental, Health, and Safety shall refer any disputes between persons and facilities about whether an individual seeking access to the CVI has a need to know to DHS for resolution. In particular, any dispute between facilities and state, local or tribal officials about whether a given official has a need to know specific CVI should be referred to the DHS chemical facility security inspector responsible for working with the facility in question.
- 6.5. Manager – PPL Electric Utilities Environmental, Health, and Safety shall reference DHS Guidance, “Safeguarding Information Designated as Chemical-Terrorism Vulnerability Information (CVI) Revised Procedural Manual” (September 2008), as it may be modified, for specific guidance on the following:
  - Disclosing CVI within a facility and among other private sector entities.
  - Facilities disclosing CVI to state, local, tribal agencies.
  - Access to CVI by State Homeland Security Advisors and Non-DHS Federal Agencies.





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- Confirmation that an individual is a CVI Authorized User.
  - Freedom of Information Act (FOIA) and related requests
- 6.6. If a CVI Authorized User possesses information from an open source that is coincidentally the same as information that has been designated as CVI, the CVI Authorized User may use the open source information in any work product without identifying it as CVI.
- 6.7. Persons (including facilities and government agencies) do not need to notify DHS of proper disclosures of CVI (i.e., disclosures to the CVI Authorized User with a need to know).
- 6.8. CFATS Compliance Manager for the applicable business line and service group shall maintain a tracking log of the receipt and disclosure of all CVI.
- 6.8.1. A tracking log reflects the receipt and subsequent dissemination of CVI, and does not itself contain any CVI. It is not a CVI document. A CVI tracking log typically would include:
- Date CVI was initially received by the covered person;
  - Description of the nature of CVI (e.g., Top-Screen);
  - Date(s) CVI was further disseminated by the covered person, if applicable;
  - Name of person who received the CVI from the covered person;
  - Contact information for the recipient;
  - How CVI was sent to the recipient.
- 6.9. Marking materials containing CVI - Regardless of form (e.g. written, verbal, electronic, or digital); all CVI, including any copies or materials derived from CVI, must be marked appropriately.
- 6.10. For paper records containing CVI, protective marking (indicated below) shall be included. Protective marking shall be placed on the top of the document and the distribution limitation statement (indicated below) shall be placed on the bottom of:
- the outside of any front and back cover, including a binder cover or folder;
  - any title page; and
  - each page of the document.





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- The protective marking is: Chemical–Terrorism Vulnerability Information.
- The distribution limitation statement is:

*WARNING: This record contains Chemical-Terrorism Vulnerability Information controlled by 6 CFR 27.400. Do not disclose to persons without a “need to know” in accordance with 6 CFR § 27.400(e). Unauthorized release may result in civil penalties or other action. In any administrative or judicial proceeding, this information shall be treated as classified information in accordance with 6 CFR §§ 27.400(h) and (i).*

- 6.11. In the case of non-paper records that contain CVI, including motion picture films, videotape recordings, audio recordings and electronic and magnetic records, a covered person must mark the records with the protective marking and the distribution limitation statement such that the viewer or listener is reasonably likely to see or hear them when obtaining access to the contents of the record.
- 6.12. CVI contained on electronic and magnetic media should have the protective marking and distribution limitation statement applied to the beginning and end of the electronic and magnetic text. The protective marking and distribution limitation statement should be displayed in such a manner that both are fully visible on the screen or monitor when the text is viewed.
- 6.13. Electronic CVI should have an electronic watermark or banner stating that CVI is being displayed.
- 6.14. All electronic storage devices (e.g., external hard drives or thumb drives) that contain CVI should be marked with the protective marking. The protective marking and distribution limitation statement should also be applied to each side of the disk and the disk sleeve/jacket, on the non-optical side of the CD-ROM and both sides of the CD-ROM case. If the electronic/magnetic text has a soundtrack, audible warnings that describe the protective marking and distribution limitation statement should, if possible, be included in the introduction and at the end of this text.
- 6.15. If any covered person receives a record or verbal transmission containing CVI that is not marked as required, this person must:
- Mark the record as specified;
  - Inform the sender of the record that the record must be marked as specified; and



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- For verbal transmissions, make reasonable efforts to memorialize the information and inform the speaker that the information warrants CVI protection.

6.16. If CVI or material containing CVI cannot be marked directly, the cases or containers in which CVI is stored (e.g., CD cases) should include the protective marking and distribution limitation statement.

6.17. When CVI is removed from an authorized storage location within the workplace and persons without a need to know are present, or where casual observation would reveal materials containing CVI, a cover sheet should be used to prevent unauthorized or inadvertent disclosure.

6.18. When transmitting CVI, an appropriate cover sheet (as described in DHS guidance "Safeguarding Information Designated As Chemical-Terrorism Vulnerability Information (CVI) Revised Procedure Manual" (September 2008), as it may be modified, must be placed on the front and back of the transmittal letter, report, or document.

## **7. Storage of CVI**

7.1. The Chemical Facility Anti-Terrorism Standards (CFATS) requires that a person take reasonable steps to safeguard CVI in that person's possession. Consistent with this requirement are the following key points:

- The workspace where CVI is stored typically should have controls to limit access (e.g., keys, key cards, badges, swipe cards) to prevent unauthorized access by members of the public, visitors, or other persons without a need to know. This may include a locked room or an area where access is controlled by a guard, cipher lock or card readers.
- When unattended, materials containing CVI must, at a minimum, be stored in a secure container. Examples of such containers may include a safe, locked file cabinet, locked desk drawer, locked overhead storage compartment such as a systems furniture credenza, or similar locked compartment.
- When CVI is managed within an area authorized for open storage of classified material, it generally is not necessary to store CVI in a locked container. However, such materials must have a CVI cover sheet to prevent unauthorized access and should be segregated from classified materials to the extent possible (i.e., separate folders, separate drawers, etc.).



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- IT systems or AIS used to handle, store, or transmit materials containing CVI should have operational and technical controls in place to ensure that only a CVI Authorized User with a need to know can access such materials and to prevent loss or theft of CVI. The computer systems should provide appropriate markings and warnings for any displayed CVI.
- Computers and other media used to handle, store, or transmit materials containing CVI should be stored and protected to prevent unauthorized access and disclosure. Storage and control of DHS or DHS contractor/consultant computers and other media containing CVI will be in accordance with DHS Information Technology Security Program Handbook for Sensitive Systems, Publication 4300A.
- Each designated locked storage container shall have a unique identification number assigned. For example, the numbering system for assigning unique identification numbers shall follow the format, XX-001, where XX stands for EU, EP (for EnergyPlus), GE (for Generation), CS or IS for the respective business line. The numbering sequence should be consecutive beginning with 001. The unique identification number for each storage container should be installed on the outside of the container where it is visible.
- Each uniquely numbered designated locked storage container shall be assigned to a Designated Compliance Manager. The Designated Compliance Manager shall:
  - Maintain key control for their specific designated locked storage container. At a minimum, a log of individuals possessing a key to the storage container shall be maintained and stored in the container. Individuals possessing a key to the container must be approved users.
  - Maintain a current inventory list of each individual CVI document stored in the container. This inventory list should be stored in the storage container.
  - Ensure that the container is locked at all times except when CVI material is being removed or returned to the container. A specific exception to this requirement is when the container resides within an area of restricted access, such as within a Physical Security Perimeter. In this case the designated storage container may remain unlocked for extended periods of time provided that the work area is continuously manned by personnel cleared for access to CVI.



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- Perform and document a quarterly assessment to verify that the CVI material on the current inventory list is stored in the container or in use by a CVI Authorized User.

7.2 Manager – PPL Electric Utilities Environmental, Health, and Safety shall maintain a current list of CVI designated locked storage containers and associated Access Control Coordinators for storage containers in their areas

## **8. Postal Service, Commercial Carriers, or PPL Interoffice Mail**

- 8.1. The United States Postal Service and commercial carriers may be used to transport CVI. For U.S. Postal Service, a return receipt or other tracking process should be used. Commercial delivery services should provide a tracking mechanism that documents the departure and receipt of the package.
- 8.2 CVI should have an appropriate inner cover or envelope, and it should be placed in an opaque, unmarked, envelope. The CVI cover page may serve as the inner envelope. The outer envelope should bear the complete name and address of the intended recipient, who must be a CVI Authorized User with a need to know. The envelope should include a notation that if the intended recipient is not at the specified address, the package shall not be forwarded to another address and must be returned to the sender. The outer envelope should not identify the contents as CVI.
- 8.3 Materials containing CVI may be transferred in an inter-office mail system so long as the measures set forth in the above are followed.

## **9. CVI in Transit or Use at a Temporary Duty Station**

- 9.1. CVI must be safeguarded when in transit or in use at a temporary duty station. The following are examples of appropriate safeguards.

CVI should:

- remain under the control of the authorized person at all times (e.g., not placed in checked baggage).
- be placed in an opaque envelope and sealed; CVI should not be viewed or displayed where people without a need to know may view the information.
- be locked in the trunk when traveling by car and when the authorized person is away from the vehicle.



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- be locked in a hotel room safe, if possible. Otherwise, for example, remain secure in a locked briefcase or suitcase within a locked room.

## **10. Faxing, E-Mailing the CVI**

10.1. CVI may be sent via non-secure fax, although use of a secure fax machine is highly encouraged. When a non-secure fax is used, the sender should:

- Confirm that the person receiving the CVI at the other end is a CVI Authorized User with a need to know.
- Coordinate with the recipient to ensure the facsimile number of the recipient is current and valid.
- Contact the recipient to ensure that the materials faxed will not be left unattended.
- Use a cover sheet for the transmitted information that clearly identifies the sender's name and telephone number and contains a warning that if the message is received by other than the intended recipient, the individual receiving the message should immediately notify the sender for disposition instructions.
- Ensure that the CVI is properly marked.

10.2 CVI may be transmitted by e-mail, provided that transmission is consistent with CFATS requirements and this Appendix. The following are examples of steps, which if taken, would be consistent with the regulations:

- CVI transmitted via e-mail should be protected by encryption or transmitted within secure communications systems. Where this is impractical or unavailable, CVI may be transmitted over non-secured e-mail accounts as a properly marked, encrypted attachment (e.g., PKZip or WinZip) or as a properly marked, password-protected attachment with the password provided in a separate e-mail. CVI should never be included in the subject or body of an e-mail transmission.
- Due to inherent vulnerabilities, materials containing CVI should not be sent to personal e-mail accounts such as Hotmail or Gmail.

## **11. Telephone and Other Verbal Communications**

11.1. When discussing CVI over a telephone, the following are examples of precautions that may be taken to comply with CVI Regulations

- The use of a Secure Telephone Unit (STU III) or Secure Telephone Equipment (STE).



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- Because the risk of interception and monitoring of conversations is greater when using cellular telephones and cordless telephones, avoid use of these devices unless the circumstances are exigent or the transmissions are encoded or otherwise protected.
- The caller must take reasonable steps to ensure that the person to whom they are communicating the CVI is a CVI Authorized User with a need to know.

11.2. More generally, when communicating CVI verbally:

- The individual providing the information should inform the receiving individual that the information is designated as CVI and subject to protection.
- Any record that may result from such a verbal conversation that contains CVI should be marked CVI.

## **12. Destruction and Disposal of CVI**

12.1. Materials containing CVI must be destroyed when no longer needed consistent with PPL's record retention policies. Acceptable methods of destruction include the following:

- "Hard Copy" materials should be destroyed by crosscut shredding, burning, pulping, or pulverizing to assure destruction beyond recognition and reconstruction.

NOTE: Remote shredding services, for example the "Iron Mountain Secure Shredding Bins," shall not be utilized to destroy CCAI. This type of service results in the loss of control of CCAI prior to its destruction.

- Electronic storage media shall be sanitized appropriately by overwriting or degaussing. Review PPL General Procedure GP-803, Records Destruction Procedure or contact ISD for additional guidance if necessary.

12.2 When destroying non-record paper copies of CVI material, they shall be mechanically shredded or otherwise destroyed beyond recognition and reconstruction.

12.3 Local CVI inventory lists shall be updated when CVI is destroyed.

## **13. CVI Derivative Products**





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- 13.1. CVI Authorized Users may develop analytical products that are derived from CVI. Derivative products are subject to the same handling, storage and marking requirements as the original CVI.
- 13.2. Wherever CVI is paraphrased in an analytical product and the paraphrased information could reveal the source of the submission (e.g., naming the particular facility name or asset) and information related to a facility's security vulnerabilities (e.g., the facility's risk based tier level or identifying a critical infrastructure/asset), that product should be handled as CVI.

## **14. Incident Reporting for Potential CVI Violations**

- 14.1. When a person becomes aware that another person without a need to know has requested CVI or that CVI has been released to a person without a need to know, the person must promptly report the incident to Manager – Corporate Safety & Health should notify the DHS Assistant Secretary via the CSAT Helpdesk (866-323-2957 or CSAT@dhs.gov) or through the DHS chemical facility inspector assigned to the facility or region in which the incident occurred. Additionally, such notification should also be provided to the PPL Office of General Counsel.
- 14.2. Manager – PPL Electric Utilities Environmental, Health, and Safety should promptly report any other loss, compromise or suspected compromise, or unauthorized disclosure of materials containing CVI to the CSAT Helpdesk (866-323-2957 or CSAT@dhs.gov) or through the DHS chemical facility security inspector assigned to the area in which the incident occurred
- 14.3. The notification or report should include the date of potential inappropriate CVI request or disclosure and any other relevant facts.
- 14.4. The notification of loss, compromise, suspected compromise, or unauthorized disclosure of materials is not CVI unless the notification itself contains specific CVI.

## **15. Emergency or Exigent Circumstances**

- 15.1. In the event that Manager – PPL Electric Utilities Environmental, Health, and Safety determines that emergency or exigent circumstances exist, he/she may disclose or provide access to CVI, as necessary, without first meeting the procedures of this section. Manager – PPL Electric Utilities Environmental, Health, and Safety shall keep a record of the disclosure or access and submit the record to the DHS chemical facility security inspector assigned to the area in which the incident occurred or to the



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CSAT Helpdesk at 866-323-2957 or CSAT@dhs.gov as soon as is practicable. The record typically should include:

- Date CVI was shared;
- Who received the CVI;
- Contact information for the recipient;
- How CVI was provided to the recipient;
- Reason for emergency or exigent access/disclosure; and
- Justification on need to know.





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**ATTACHMENT B - Quarterly Screening Threshold Quantities Consent Sheet**

**Quarterly Screening Threshold Quantities Consent Sheet**

Complete this form quarterly to document that your facility\* does not possess any "chemicals of interest" at or above Department of Homeland Security's list of Screening Threshold Quantity.

By signing below, I am certifying that \_\_\_\_\_  
Facility Name

does not possess any chemicals at or above the Screening Threshold Quantity, as defined on Appendix A, 6 CFR Part 27, Department of Homeland Security Chemical of Interest List: [Homeland Security Appendix A: Chemicals of Interest \(COI\) List](#).

**REVIEWED BY** (Person assigned as the facility's responsible manager):

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

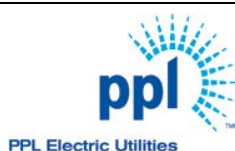
**APPROVED:**

\_\_\_\_\_  
CFATS Compliance Manager's Signature

\_\_\_\_\_  
Date

**\*Facility** – A facility means any facility that possesses, or plans to possess, at any relevant point in time, a quantity of a COI listed in CFATS Appendix A. The term includes, but is not limited to, buildings, offices, distribution centers, storage units, generating stations and other electric facilities. Some examples of PPL facilities include the Buxmont Service Center, Quarryville Service Center and General Office Tower Building.

**Send completed form to Safety Operations, WALO**



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## SP 57 SAFETY PROCEDURE USING MOBILE CRANES IN CONSTRUCTION

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### 1.0 PURPOSE/SCOPE

- 1.1 Effective November 8, 2010, OSHA regulation 29 CFR Part 1926 sub part CC became effective. This regulation had new or enhanced requirements for mobile cranes and mobile crane operations and specifically requires certification or licensing of all mobile **crane operators** operating cranes greater than 1-ton capacity by November 2017. Individual states may have their own licensing requirements.
- 1.2 This procedure establishes the minimum safety requirements to be followed by all workers when working on, with, or around cranes when being used in **construction**.
- 1.3 This procedure applies only to mobile cranes and associated **attachments** when used with the crane. Types of mobile cranes used at PPL are listed below:
  - 1.3.1 Hydraulic swing cab type, which include:
    - a. Rough-Terrain mobile crane and All-Terrain mobile crane
    - b. Production digger
    - c. Digger-derrick with a *crow's nest* (an operator's seat mounted on a boom – the seat rotates with the boom).
  - 1.3.2 Hydraulic fixed cab type, which include:
    - a. Mobile crane (wheel mounted mobile crane)
    - b. Pole rig (truck mounted mobile crane)
    - c. Knuckle boom (articulating type)
    - d. Center-mount boom
    - e. Digger-derrick truck
  - 1.3.3 Lattice crawler mount
  - 1.3.4 Lattice truck mount
- 1.4 Exemptions include:
  - 1.4.1 Permanently installed Gantry cranes
  - 1.4.2 Digger Derricks and their operators are exempt from the power line safety portion of this procedure.
  - 1.4.3 Forklifts with rigging attachments are exempt unless performing construction activities. This is covered under General Safety Procedure #33 (Powered Industrial Trucks).
  - 1.4.4 Knuckle booms and their operators are exempt when delivering materials to a general drop off point. However, if the knuckle boom stages the



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material to facilitate **construction**, or places it on the equipment this procedure applies.

- 1.4.5 Machinery originally designed as vehicle-mounted aerial device (for lifting people) and self-propelled elevating work platforms. This includes mini digger derricks (EZ hauler), Muskeg tracked line trucks, and Material handling bucket trucks.
- 1.5 Assembly and disassembly of cranes is normally performed by outside vendors, and it is not routinely performed by PPL employees. (If PPL employees must engage in this activity, refer to OSHA 1926.1403 for details.)
- 1.6 Contractors are required to follow OSHA's minimum requirement for all work pertaining to the use of cranes used in **construction**. PPL is not required to train contractors.
- 1.7 This procedure applies to PPL Electric Utilities and to contractors, vendors, or consultants utilized by PPL Electric Utilities.
- 1.8 Prevent or minimize injury to people.
- 1.9 Provide direction to workers who operate or work around cranes.
- 1.10 Define the roles and responsibilities of crane operators, qualified crane and wire rope inspectors, signal person, spotters, crews (crew working around the crane) and business lines.
- 1.11 Define requirements that need to be followed for crane rules and how they apply.
- 1.12 Specify safety components related to operating a crane.

## 2.0 RESPONSIBILITY

### 2.1 Crane Operators

- 2.1.1 Successfully complete the required crane operator training.

A crane operator is a competent crane and wire rope inspector.

A crane operator is also qualified as a signal person and/or spotter.

- 2.1.2 Do not use a cell phone, other than when used for signal communication, when operating a crane. The operator must receive signals hands free.
- 2.1.3 Authority is given to stop crane operations whenever there is a safety concern. The crane operator will accept a stop signal from anyone.



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- 2.1.4 Ensure the tailboard is conducted prior to performing the task of operating a crane with the spotter, signal person and crew.
- 2.1.5 Ensure the ground stability conditions are acceptable prior to operating the crane.
- 2.1.6 Inspect cranes and wire ropes.
- 2.1.7 Apply a defective tag to cranes or wire ropes that are found to have a safety deficiency.
- 2.1.8 Verify the operator's manual is located inside the cab of the crane, and review the manual prior to operating the crane.
- 2.1.9 Follow the criteria in Section 5.1.5 of this procedure when lifting workers with a crane.
- 2.1.10 Establish counter weight swing zone area protection if there is a potential of a crushing hazard. The crane operator must grant permission for people to enter the swing area.
- 2.1.11 Ensure that a signal person and a spotter are used in accordance with Section 5.1 of this procedure.
- 2.1.12 If it is possible for a person who is not part of the crane crew to enter the work area, then the crane operator/crew must establish work area protection prior to operating the crane. The crane operator must grant permission for non-crew workers to enter the work area.
- 2.1.13 Secure the crane, according to manufacturer's recommendation, when storm or high wind warnings exist.
- 2.1.14 Stow/secure the crane when not in use. Follow manufacturer's instructions.
- 2.1.15 Follow manufacturer's recommendations for stowing/securing the boom when traveling with the crane.
- 2.1.16 Prior to November 2017, an employee who is being trained as a crane operator must have completed formal classroom training, and is under direct supervision of a qualified crane operator. This training includes operating PPL-owned and rented cranes.
- 2.1.17 The operator's trainer and the operator-in-training must be in direct line of sight of each other and they must be in direct communication at all times.
- 2.1.18 The operator-in-training must not operate the equipment within 20 feet of a power line that is up to 350kV, or within 50 feet of a power line that is over 350kV.



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**2.2 Qualified Crane & Wire Rope Inspector**

- 2.2.1 Successfully complete the required courses to attain the necessary skills to serve as a qualified crane and wire rope inspector.
- 2.2.2 Inspect, annually, cranes, crane components and all attachments to ensure safe working condition of the equipment.
- 2.2.3 Document, maintain and retain the annual inspection records for a minimum of 12 months.
- 2.2.4 Ensure the following requirements are met for cranes repaired, adjusted, or modified prior to being placed back into service:
  - a. Repairs, adjustments, or modifications meet the manufacturer's criteria. (NOTE: If the manufacturer's information is not available, determine if a registered professional engineer is needed to approve changes made. This may mean he/she must develop criteria for the changes); and
  - b. Perform a functional test of the repaired/adjusted equipment.
- 2.2.5 Inspect, annually, wire ropes to ensure safe working condition of the rope. Document, maintain and retain the inspection records for a minimum of 12 months. Inspection paperwork will include:
  - a. Items checked (must include the entire length of the wire rope)
  - b. Results of the inspection
  - c. Name and signature of the person conducting the inspection
  - d. Date of the inspection
- 2.2.6 Apply a defective tag to cranes or wire ropes that have a safety deficiency. A tag must be placed inside the cab of a crane stating that the equipment is out of service and is not to be used. A tag must be placed in a conspicuous place (e.g. on the door, steering wheel, or key ring) when taking a function out of service.

**2.3 Signal Persons**

- 2.3.1 Successfully complete the required courses to attain the necessary skills to serve as a signal person.
- 2.3.2 Safely guide the load, monitor and give instructions to the crane operator as the load is moved, attached or detached.
- 2.3.3 Know, understand and use the Standard Hand Signals.



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- 2.3.4 Know and understand equipment operation and limitations, including crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.
- 2.3.5 Participate in a tailboard meeting with the crane operator, spotter and all crew prior to performing the task of signaling the crane operator. Discuss hazards associated with the work performed using a crane.
- 2.3.6 Authority is given to stop crane operations whenever there is a safety concern.
- 2.3.7 Stop the crane operator – immediately – if a person enters the work zone or the counter weight swing zone without the crane operator's permission.
- 2.3.8 When tending a tag line, never loop the line around your hand, arm, or body. This could cause you to be dragged along with the load.
- 2.4 Spotters
  - 2.4.1 Successfully complete the required courses to attain the necessary skills to serve as a Spotter/Signal Person (CRN002).
  - 2.4.2 Sole responsibility of the spotter is to spot for the crane operator.
  - 2.4.3 Participate in a tailboard meeting with the crane operator, signal person, and crew prior to performing the task of spotting for the crane operator. Discuss all hazards associated with the work performed using a crane.
  - 2.4.4 Assist the crane operator – serve as a visual aid to the crane operator. Ensure the following requirements are met at all times when the crane is operated:
    - a. Stay in continuous contact with the crane operator. Use communication devices such as walkie-talkies, radios, or hand signals. It is best practice to remain as visible as possible to the crane operator.
    - b. Be positioned to effectively gauge the minimum clearance distance from power lines, or other objects.
    - c. Give timely information to the crane operator so the required minimum approach distance is always maintained from power lines.
    - d. At night, follow the safe path of travel and be visible to the crane operator by means of lights (i.e., portable light standards, bright flash lights, a well lighted vehicle driven in front of the crane, etc.)
  - 2.4.5 Stop crane operations whenever there is a safety concern.



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**2.5 Crew**

- 2.5.1 Participate in the pre-job tailboard.
- 2.5.2 Know and understand the hazards associated with working around or near heavy equipment, such as cranes.
- 2.5.3 Successfully complete CRN003 (Crew Awareness Training) and demonstrate how to identify hazardous conditions and when to give the emergency stop signal.
- 2.5.4 Stop crane operations whenever there is a safety concern or a potential safety hazard is observed.

**2.6 Management**

- 2.6.1 Require employees who work on or around cranes and equipment to work within the provisions of this procedure.
- 2.6.2 Require that employees who work on or around cranes and equipment are properly trained. Training requirements for each role and responsibility mentioned in this procedure are outlined in Section 8.0 (Training and Safety).
- 2.6.3 Require that employees complete retraining as necessary. Situations in which retraining is required include, but are not limited to:
  - a. Employee(s) involved in an incident.
  - b. Displays inadequacies in a crews' knowledge and/or skills.
  - c. Changes in the workplace render previous training obsolete.
  - d. Changes in the types of cranes or equipment to be used render previous training obsolete.

**3.0 APPLICABILITY**

- 3.1 This procedure establishes the minimum safety requirements to be followed by all workers when working on, with, or around cranes when being used in construction.
- 3.2 This procedure applies only to mobile cranes and associated attachments when used with the crane.



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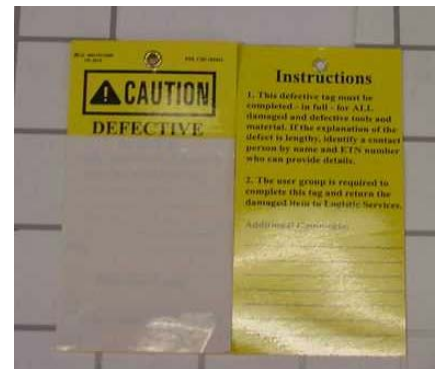
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- 4.10 **Crane operator** – a crane operator is one who is certified or licensed to operate a crane and qualified to inspect cranes and wire ropes. Crane operators are a competent and qualified person.
- 4.11 **Crew** – workers that are associated with the crane work activities and have participated in the tailboard. Crew must successfully complete CRN003 (Crew Awareness Training) prior to working near or around operating cranes.

Note: **Crane operators, signal person** and **spotter** personnel are considered members of the crew, but their training supersedes the general Crew Awareness Training.

- 4.12 **Critical lifts** – lifts that require special attention. Critical lifts include:
- 4.12.1 Any time the load exceeds 75% of the rated capacity, at any radius.
  - 4.12.2 Lifts where failure/loss of control could result in loss of life.
  - 4.12.3 Lift involving special high dollar items such one-of-a-kind articles, or major facility components whose loss would have serious impact.
  - 4.12.4 Lifting of personnel with a crane.
  - 4.12.5 A non-routine lift requiring detailed planning and additional or unusual safety precautions.
  - 4.12.6 Lifts which require the load to be lifted, swung, or placed out of the view of the crane operator (also requires a signal person).
  - 4.12.7 Lifts made with more than one crane (also requires a Lift Director).
  - 4.12.8 Lifts involving non-routine or technically difficult rigging arrangements.

- 4.13 **Defective tag** – is used to warn personnel that the crane or equipment is defective and must not be used. This tag may be ordered through the PPL Logistic Services Department (CID #1034210) – refer to photo on right.



- 4.14 **Derrick** – a simple crane having lifting tackle slung from a boom
- 4.15 **Fall zone** – means the area (including but not limited to the area directly beneath the load) in which it is reasonable foreseeable that partially or completely suspended materials could fall in the event of an accident.
- 4.16 **Hoisting routes** – the area around and below an area where materials or objects are being raised or lifted. Hoisting routes minimize the exposure of workers to hoisted loads.
- 4.17 **Lift director** – is required when lifts are made with more than one crane or when lifting workers. A lift director must be a qualified crane operator. The lift director must be at the site of the lift at all times when a critical lift is performed.



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- 4.18 **Minimum clearance distance** – is the distance in which the equipment (crane at full extension and all associated parts) maintains specific distances from energized power lines. Section 10 of this procedure spells out the minimum clearance distances allowed when working near power lines.
  
- 4.19 **NCCCO** (National Commission for the Certification of Crane Operators) – is accredited for conducting proper certification as it relates to all operations of cranes and equipment.
  
- 4.20 **Operational aids** – devices that assist the crane operator in the safe operation of the crane by providing information or automatically taking control of a crane function. Operational aids includes boom hoist limiting devices and anti two-blocking device.
  
- 4.21 **Operator-in-training** – is an employee who is being trained as a crane operator, but is not yet qualified. PPL electric Utilities must provide each operator-in-training sufficient training prior to allowing the person to operate the crane and equipment safely. If performing training in a controlled training setting that is not part of production work, then the operator-in-training license is not required. A trainee, who is not yet qualified to operate a digger-derrick, may operate the digger-derrick, on the job, while under the direct supervision of a qualified operator.
  
- 4.22 **Qualified crane and wire rope inspector** – are Transportation Department employees, in Pennsylvania, who have completed course TM0110 (Performing PM and State Inspections), or an equivalent 3<sup>rd</sup> party training. They are permitted to operate cranes less than 15 ton capacity for maintenance purposes provided they have completed the equipment checklist for the crane they will operate. They are not permitted to operate a crane with 15 ton or greater capacity.
  
- 4.23 **Rated capacity** – is the maximum working load permitted by the manufacturer. The working load includes people, tools and materials combined.
  
- 4.24 **Signal person** – is a person qualified, by being properly trained, to know and understand the proper use of hand signaling. The signal person must be competent in applying each type of signal used, and must have an understanding of equipment operation, limitations and crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads. The Signal Person must demonstrate his/her understanding through an oral or written test, and through a practical test.

An employee who has successfully completed the following MST courses has attained the necessary skills to serve as a signal person/spotter.

- 4.24.1 CRN002 Spotter/Signal Person for Cranes Training
- 4.24.2 CRN003 Crane Crew Training
- 4.24.3 Know and understand equipment operation and limitations, including crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.



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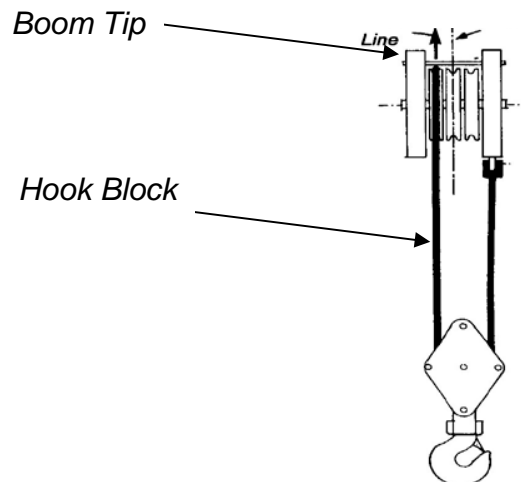
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- 4.25 **Spotter** – ensures safe minimal distances are maintained when the crane is operated near power lines (refer to Section 10 of the procedure for more information). A spotter must be a qualified signal person. In Electric Utilities, the spotter can also be used as a Qualified Watchperson.

An employee who has successfully completed the following MST courses has attained the necessary skills to serve as a signal person/spotter.

- 4.25.1 CRN002 Spotter/Signal Person for Cranes Training
- 4.25.2 CRN003 Crane Crew Training

- 4.26 **Standard hand signaling chart** – a chart used by signal personnel to communicate effectively with the crane operator. The chart is universally used.
- 4.27 **Tag line** – is a non-wire rope used to control the load. The tag line will keep a load under control (preventing the load from swinging or spinning), as well as put distance between the rigger and the suspended load. Tag Lines must be inspected prior to each use. Inspection review criteria include looking for: tears, fraying and ensuring the tag line is kept clean and dry at all times. When using a tag line within the distances of Table A or Table T it must be non-conductive. All Tag lines ordered through PPL Logistic Services are non-conductive.
- 4.28 **Tailboard** – is a meeting or job briefing conducted by the person-in-charge prior to the beginning of work to discuss hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements. Information derived from a tailboard is used to prevent property damage and injuries.
- 4.29 **Two-blocking** – is when the *boom tip* and the *hook block* contact each other. An **anti two-block device** prevents this from happening. If it functions properly it stops the function before the collision occurs.



- 4.30 **Visual aid** – may include a clear visible line painted on the ground, a clearly visible line of stanchions, a set of clearly visible line-of-site landmarks (fence post behind the spotter and a building corner ahead of the spotter).



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- 4.31 **Work zone or (work area protection)** – is a boundary that is set up by flags, or other devices, to ensure no part of the crane is operated outside of that area. Work zone is the area 360 degrees around the equipment, up to the equipment's maximum working radius.

### **5.0 MAIN BODY**

#### **5.1 Crane Rules and Applications**

##### **5.1.1 A Spotter is required when:**

- a. Traveling with no load (e.g., driving a crane) and there is a possibility of getting closer than 20 feet to an overhead power line. You must have a spotter to ensure minimum distances are not violated (refer to Table T)
- b. If you are lifting or traveling with a load and you are closer than:
  - 20 feet (at voltages less than 350kV)
  - 50 feet (at voltages greater than 350kV)Refer to Table A
- c. Exception: When T&D employees are working on exposed energized lines they follow 1910.269 (or Subpart B of 1926) including the use of a qualified watchperson. The qualified watchperson is the spotter.

##### **5.1.2 Signal Person is required when:**

- a. The point of operation is not in full view of the crane operator.
- b. Traveling with a crane and the view is obstructed.
- c. It is determined necessary (either due to site specific safety concerns from the crane operator or the person handling the load).
- d. Communication between the crane operator and the signal person or spotter (when used) must be maintained continuously during all crane movements. If at any time communication is disrupted, the operator must stop all crane movements until communication is restored.
- e. If the crane operator has any concerns regarding the requested movement of the crane or needs to communicate with the signal person, the operator must stop all crane movement. Crane movement must not resume until the crane operator and the signal person agree the issue is resolved.



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- f. Several means of communication between the crane operator and the signal person are acceptable including the use of hand, voice and audible signals.
- g. When using hand signals, the standard hand signaling chart must be posted on the crane, usually on the control side, or in the area of the hoisting operations. Refer to Table 2 (below) for chart information:





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**Table 2 – Standard Hand Signaling Chart**





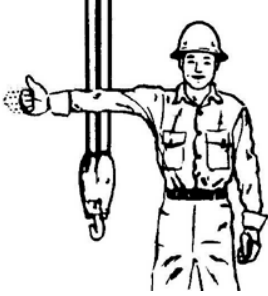
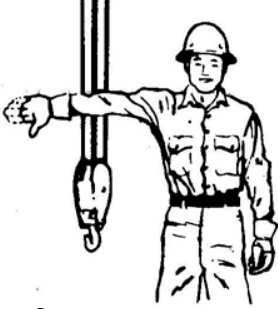
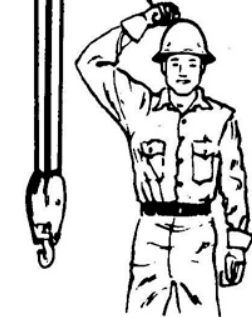

	<p><b>Emergency Stop:</b>          Both arms extended, palms down, move arms back and forth horizontally.</p>		<p><b>Stop:</b>          Arm extended, palm down, move arm back and forth horizontally.</p>
	<p><b>Move Slowly:</b>          Use one hand to give any motion signal and place the other hand motionless in front of the hand giving the signal.</p>		<p><b>Swing:</b>          Arm extended, point with finger in direction of desired boom swing.</p>
	<p><b>Hoist:</b>          With forearm vertical, and forefinger pointing up, move hand in small horizontal circle.</p>		<p><b>Lower:</b>          With arm extended downward, and forefinger pointing down, move hand in a small horizontal circle.</p>
	<p><b>Raise Boom:</b>          Arm extended, fingers closed, thumb pointing upward.</p>		<p><b>Lower Boom:</b>          Arm extended, fingers closed, thumb pointing downward.</p>



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**Table 2 – Standard Hand Signaling Chart**

	<b>Extend Boom:</b> Both fists in front of body with thumbs pointing outward.		<b>Retract Boom:</b> Both fists in front of body with thumbs pointing in toward each other.
	<b>Extend Boom: (One Hand Signal)</b> One fist in front of chest with thumb tapping chest.		<b>Retract Boom: (One Hand Signal)</b> One fist in front of chest, thumb pointing outward and heel of fist tapping chest.
	<b>Raise the Boom and Lower the Load:</b> With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.		<b>Lower the Boom and Raise the Load:</b> With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.
	<b>Use Main Hoist:</b> Tap fist on head, then use regular signals.		<b>Use Whipline (Auxiliary Hoist):</b> Tap elbow with one hand, then use regular signals.





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**Table 2 – Standard Hand Signaling Chart**

	<p><b>Travel:</b>          Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>		<p><b>Dog Everything:</b>          Clasp hands in front of body.</p>
	<p><b>Travel (Both Tracks):</b>          Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)</p>		<p><b>Travel (One Track):</b>          Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For land cranes only.)</p>

- h. Prior to using voice signals, the signals must be discussed and agreed upon by the signal person and/or spotter and the crane operator.
  - Use a hands-free walkie-talkie, or radio, and test them to ensure they work before lifting operations begin. Signal transmission must be through a dedicated channel. It is also recommended that extra batteries are readily available for units requiring them.
- i. Prior to beginning the lift, the crane operator and signal person must contact and identify each other.
- j. All directions given to the crane operator by the signal person must be given from the operator's direction perspective (e.g. swing right means swing in the direction of the operator's right).
- k. Each series of voice signals must contain three elements stated in the following order:
  - function and direction (e.g., swing right)
  - distance (e.g., 50 feet)
  - function or pace (e.g. slow)



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- I. Prior to using audible signals, the signals must be discussed and agreed upon by the signal person and the crane operator. Typically, the horn is used for audible signaling for driving a crane.
  - STOP; one short audible signal
  - GO AHEAD; two short audible signals
  - BACK UP; three short audible signals

**5.1.3 Moving a Load**

- a. The work zone must be established prior to moving a load.
- b. When moving a load the signal person and/or the crane operator must verify:
  - The load is secured and balanced in the sling or lifting device before it is lifted more than a few inches.
  - The lift and swing path is clear of obstructions and workers.
- c. Before starting to lift a load, the following conditions must be noted:
  - The hoist rope is not kinked.
  - Multiple part lines are not twisted around each other.
  - The hook is brought over the load in such a manner to minimize swinging.
  - If there is a slack rope condition, it must be seated on the drum and in the sheaves as the slack is removed.
  - Consider the wind on the load and on the crane stability.
- d. During lifting operations, ensure the following safety precautions are followed:
  - There is no sudden acceleration or deceleration of the moving load.
  - Load, boom, or other parts of the equipment do not contact any obstruction.
  - Avoid carrying loads over people.
  - When approaching the rated load capacity, test your brakes.
  - Outriggers are set according to manufacturers recommendations. Pads used on the outriggers are not required to be non-conductive.

**5.1.4 Using Two or More Cranes**

- a. When two or more cranes are used to lift or support a load only one signal person must be used. The lift director must analyze the operation and instruct all other involved workers in the proper positioning, rigging of the load and the movements to be made.



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5.1.5 Lifting Personnel

- a. Ensure the work zone is set up to prevent interruptions to the crane operator.
- b. The use of a crane to hoist workers is only allowed when PPL demonstrates that it would be more hazardous to erect, use and dismantle conventional means for reaching the work area, or if it is not possible.
- c. Lifting of personnel with a crane is considered to be a critical lift and it must be well planned by a lift director. Prior to the start of each shift, a trial lift without personnel on the platform must be performed from the ground level to the work location.
- d. If a hook has a lock pin and spring loaded mouse, the pin does not need to be installed as long as the latch on the spring-loaded mouse is in the closed position prior to lifting personnel. There are no requirements for using the pin when lifting personnel.
- e. The following criteria must apply when lifting personnel:
  - Personnel platforms must not be loaded in excess of its rated capacity, and must be less than 50% of the cranes positioned capacity including tools, materials and workers.
  - Materials and tools must be secured and evenly distributed on the platform.
  - Number of workers must not exceed the maximum number the platform is designed to hold.
  - Use only the manufactured-supplied equipment as intended by the manufacturer when making the lift.
  - Ensure workers wear fall protection when aloft inside the lifting basket [except when working over water, a personal flotation device (e.g., a coast guard approved life vest) is needed.].
  - Attach the fall protection device to the basket, not the hook.

**NOTE:** Stop the equipment if it fails. Immediately, return personnel safely to ground level.

- f. Personnel must not be lifted when any crane related devices are not functioning properly.
- g. Traveling with personnel in a crane basket is not permitted.



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**5.1.6 Safety Devices and Operational Aids**

- a. The following safety devices are required on all cranes, and it is the crane operator's responsibility to ensure, prior to use, equipment is in place and working properly:
- Crane level indicator
  - Boom stops
  - Jib stops
  - Equipment with foot pedal brakes must have locks
  - Horn

NOTE: If a permanently installed crane level indicator is defective, it must be tagged and use a carpenter's level. If the horn does not work, use a portable air horn.

- b. Boom limit switches are considered to be an operational aid. If this switch is factory-installed by the manufacturer, it is required.
- c. If an operational aid stops working, stop operating the crane and establish an alternate means. If unable to establish an alternate means then discontinue crane operation.

NOTE: Verified weights, measured radius and manufacturer's load chart capacities and instructions must take precedence over operational aids when handling a load.

- d. The use of a boom hoist limiting device is required. If this device fails, one of the following temporary alternative measures may be used, if necessary, to complete that day's work task. (Exception: Operations must stop when lifting personnel.)
- Boom angle indicator
  - Clearly mark the boom hoist cable at the point that will give the crane operator and signal person sufficient time to stop the hoist to keep the boom within the minimum allowable radius. Additionally, install mirrors if necessary so the crane operator sees the mark.
- e. The use of an anti two-block device, if installed, is required to function properly. This device prevents damage at all point where two-blocking could occur. If this device fails, one of the following temporary alternative measures may be used, if necessary, to complete that day's work task. (Exception: Operations must stop when lifting personnel.)
- Clearly mark the cable so that it can easily be seen by the crane operator at the point that will give the him/her sufficient time to stop the hoist to prevent two-blocking; or
  - Use a signal person.



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**5.1.7 Power Line Safety**

- a. Electric Utilities employees, who are qualified electrical workers, working with equipment near power lines will follow OSHA 29 CFR 1910.269.
- b. The crane cannot be operated under a power line unless the power line is visibly grounded. When power lines are not grounded, cranes must maintain a 20 foot clearance to the energized power lines up to 350kV when the crane's equipment is fully extended. Refer to Table T for travel.
- c. When operating a crane near power lines (except when the crane is traveling without a load), the crane operator must adhere to the following safety practices:  
NOTE: Operating includes actions such as positioning the crane, rotating the crane cab, articulating and/or moving the boom with or without a load and traveling with a load.
  - The crane operator must identify the work zone. No parts of the crane will be operated outside the designated work zone.
  - The crane operator, signal person and/or spotter, and all members of the crew must know the voltage of the nearby power lines. Assume all power lines are energized and not insulated unless lines are out of service and grounded.  
NOTE: It is the contractor or business lines responsibility to contact Electric Utilities at least two or more days prior to working near power lines.
  - If the line is energized, follow Table A (below) to ensure the crane, including rigging and lifting accessories, maintains the minimum clearance distance from any energized apparatus.  
NOTE: Tell Tales are considered to be part of an energized line and may not be used as part of the elevated warning line.

**Table A**  
**Minimum Clearance Distance for Non-Qualified Electrical Workers When Traveling or Working with or without a Load around Power Lines**

<b>Voltage (kV)</b>	<b>Minimum Clearance Distance</b>
Up to 50	10 feet
Over 50 to 200	15 feet
Over 200 to 350	20 feet
Over 350 to 500	25 feet
Over 500 to 750	35 feet
Over 750 to 1,000	45 feet
Over 1,000	* As established by a PPL Electric Utilities <b>Qualified Person</b>

\* Note: PPL Electric Utility employees, who are qualified electrical workers, working with equipment near power lines will follow OSHA 1910.269



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- If the line is energized, properly ground the crane.
  - Use clean and dry tag lines. Tag lines must be inspected prior to each use, to ensure they are clean and dry at all times. It is not necessary to document the inspection of the tag lines.
  - Elevated high-visibility markings must be erected and maintained in view of the operator at the Table A distance to help ensure that the crane operator does not get closer than the minimum clearance distance. Some examples include:
    - Elevated warning line (Tell Tails are considered energized)
    - Barricade
    - Line of signs
  - If the crane operator is unable to see the elevated warning line, a dedicated spotter must be used in addition to using one of these measures:
    - A proximity alarm
    - A range control device
    - An automatic range limiter
    - An insulating link between the end of the load line and the load.
- d. When traveling without a load on a crane near power lines, the crane operator must adhere to the following safety practices:
- Lower the boom/mast, as much as possible, to stay outside the boundaries as referenced in Table T. (Take into consideration the speed and terrain at all times.)
  - Know the voltage of the nearby power lines. Assume all power lines are energized and are not insulated.
  - If any part of the crane is closer than 20 feet, a spotter must be used and communications between the crane operator and the spotter must be in place at all times during the travel duration.



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**Table T**  
**Minimum Clearance Distance for Non-Qualified Electrical Workers While**  
**Traveling with No Load**

<b>Voltage (kV)</b>	<b>While Traveling - Minimum Clearance Distance</b>
Up to 0.75	4 feet
Over .75 to 50	6 feet
Over 50 to 345	10 feet
Over 345 to 750	16 feet
Over 750 to 1,000	20 feet
Over 1,000	As established by a PPL Electric Utilities <b>Qualified Person</b>

\* Note: PPL Electric Utility employees, who are qualified electrical workers, working with equipment near power lines will follow OSHA 1910.269

- Use a spotter when traveling at night. Ensure the spotter is visible at all times by means of lights (i.e., portable light standards, bright flash lights, a well lighted vehicle driven in front of the crane, etc.).
  - During the day, use additional visual aids when performing this task.
- e. If unintentional contact with energized overhead power lines occurs:
- Remain in the cab – do not panic
  - Keep everyone away from the crane
  - Attempt to move the crane in the opposite direction from the energized line
  - Do not resume operating the crane until after it is inspected by the qualified crane and wire rope inspector.

#### 5.1.8 Inspections of Cranes and Wire Ropes

##### a. Crane Inspections

Note: There are three different types of crane (and crane attachment) inspections – they are: pre-shift, monthly and annual inspections.

- Pre-shift (prior to each use), all crane components, attachments and safety devices must be inspected to ensure safe working condition of the equipment. The crane operator must use an inspection checklist similar to the laminated Attachment A (Mobile Crane Pre-Shift Inspection Checklist) for this purpose. It is not necessary to retain this form when used for this purpose.
- Monthly, all crane components, and the attachments, must be inspected. The crane operator performing the monthly inspections





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must use an inspection checklist similar to Attachment B (Mobile Crane Monthly Inspection Checklist).

- The crane operator will indicate an inspection was performed by filling out the crane and wire rope inspection tag, showing only the month and year. For example: 10/11 – the next inspection due date is sometime in November 11/11.
- Monthly Crane Safety Checklists must be retained for a period of three months.
- Forward original completed Monthly Crane Safety Checklist to the responsible supervisor.

NOTE: If a safety deficiency is found, the equipment must be taken out of service until it has been corrected and deemed safe to use.

NOTE: If the monthly inspection tag is lost, contact your local Transportation Department for a replacement. The Transportation Department employee will look up the annual date and transfer this date onto the new tag. At the same time they will verify that one of their mechanics did a PM in the last months. If there is documentation that the PM was conducted in the last three months, Transportation Department will tell the operator to do the first monthly inspection. If a PM was not documented in the last three months, Transportation Department will be responsible for the monthly inspection on the replacement tag.

- Annually, cranes and all components, and attachments, must be inspected by qualified crane and wire rope inspector to ensure safe working condition of the equipment. The qualified crane and wire rope inspector will document, maintain and retain the inspection records for a minimum of 12 months. Inspection paperwork will include:
  - Items checked
  - Results of the inspection
  - Name and signature of the person conducting the inspection
  - Date of the inspection
  - Annual inspection tags, indicating the date and the person conducting the inspection, are applied to all mobile cranes
- Idle equipment, not used for three months or more, must be inspected by a qualified crane and wire rope inspector prior to being placed back into service.





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b. Wire Ropes

- Wire Rope inspections must be conducted. The wire rope inspections may be completed by a crane operator or a qualified crane and wire rope inspector. Each inspection criteria is explained below:
  - Pre-shift (prior to each use); all wire ropes which are part of the crane that will be used that day must be inspected by the crane operator to ensure safe working condition. The inspection process includes looking for broken wires, rust and any other damage that may be visible.
  - Monthly, wire rope (components used that day) must be inspected and inspection findings must be documented using Attachment B (Mobile Crane Monthly Inspection Checklist). The checklists must be retained for a period of three months. The monthly inspection may be performed by the crane operator.
  - Annually, wire ropes must be inspected by a qualified crane and wire rope inspector to ensure safe working condition of the equipment. The qualified crane and wire rope inspector will document, maintain and retain the inspection records for a minimum of 12 months. Inspection paperwork will include:
    - i. Items checked (must include the entire length of the wire rope)
    - ii. Results of the inspection
    - iii. Name and signature of the person conducting the inspection
    - iv. Date of the inspection
  - If a wire rope safety deficiency is found the wire rope must be taken out of service and repaired or replaced according to manufacturer's recommendation.
- Cranes that are repaired, adjusted, or modified; and wire ropes that are repaired or replaced must be reviewed and approved by a qualified crane and wire rope inspector prior to being placed back in service.



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c. Wearing Fall Protection

- Fall protection must be worn when inspecting cranes with walking/working surfaces (that have unprotected sides) more than 4 feet above the lower level. Following are examples when fall protection may be needed:
  - When moving point-to-point
    - i. On non-lattice booms (whether horizontal or not horizontal)
    - ii. On lattice booms that are not horizontal
    - iii. On horizontal lattice booms where the fall-distance is more than 4 feet.
- A fall arrest system is permitted to be anchored to the crane's hook (or other part of the load line) as long as:
  - In accordance with General Safety Procedure #2 (Fall Protection) it has been determined that the set-up and rated capacity meets the anchor point requirements of 5,000 pounds.
  - The crane operator must be at the work site and informed that the equipment is being used for this purpose.
  - No load is suspended from the load line when the personal fall arrest system is anchored to the crane's hook.

5.1.9 Work Area Control

- a. Establish work area protection if it is possible for a person, who is not part of the crane crew, to enter the work area. The crane operator must land the load and grant permission for non-crew people to enter the work area.
- b. Rotating counter weighted super structures swing zone hazards must be controlled where there is a possibility of injury. To prevent striking, pinching and crushing injuries inside the work area, the following plan must be followed:
  - Place barricades to prevent unauthorized entrance of personnel to the swing hazard area.
  - Anyone entering the swing hazard area must first obtain permission from the crane operator.
- c. Hoisting routes must be used while the crane operator is moving a suspended load; no worker must be within the fall zone, except for workers that are (with permission from the crane operator):
  - Engaged in hooking, unhooking or guiding a load; or



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- Engaged in the initial attachment of the load to a component or structure
- d. Workers assigned to hook and unhook or guide a load must meet the following guidelines to ensure their safety:
  - Rig hoisted materials to prevent unintentional movement or displacement.
  - Use only hooks with self-closing latches. J-hooks are permitted to be used for setting wooden trusses only.
  - The crane operator must be satisfied with the rigging prior to performing the lift.
- e. During a tilt-up or tilt-down operation (moving the load from horizontal to vertical a/k/a up-ending the load):
  - No workers can be directly under the load during a tilt-up or tilt-down operation. Workers can be in the fall zone only if it is infeasible to do essential operations from outside the fall zone. Essential operations include:
    - Physically guiding the load
    - Closely monitoring and giving instructions about the load's movement
    - Detaching or attaching to another component or structure
  - If work is required to be performed under a suspended piece of equipment supported by a crane, the load must be blocked or supported by cribbing.

**5.2 Forklifts**

- 5.2.1** Forklift boom attachments that do not use powered winch systems to raise or lower materials are acceptable and do not fall under the crane use requirement. The following forklift attachments used at PPL are exempt from OSHA's crane regulation:





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5.2.2 Forklifts with Jersey barrier pickers are also exempt from the crane regulation.

### **6.0 REFERENCES**

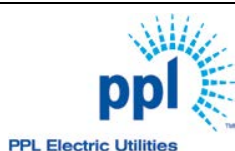
- 6.1 [Safety Procedure #2 - Fall Protection](#)
- 6.2 [PPL Electric Utilities Safety Rule Book](#)

### **7.0 REGULATORY REQUIREMENTS**

- 7.1 [OSHA 29 CFR 1926 Subpart M - Fall Protection](#)
- 7.2 [OSHA 29 CFR 1926 Subpart CC - Cranes & Derricks in Construction](#)
- 7.3 ASME B30.5-2007 (Mobile and Locomotive Cranes)
- 7.4 ASME B30.23-2005 (Personnel Lifting Systems)

### **8.0 TRAINING / SAFETY**

- 8.1 Crane Operator Certification requires demonstrating his/her understanding of operating equipment through proper training and passing an oral or written test, and a practical exam.
- 8.2 Tests are developed by an accredited crane operator testing organization (NCCCO or equivalent).
- 8.3 Re-licensing for crane operators is determined by individual states.
- 8.4 Certification for crane operators above 1-ton capacity is required every 5 years per OSHA beginning in 2014.
- 8.5 An employee who has successfully completed the following MST courses has attained the necessary skills to serve as a crane operator.
  - PQS012 (Basic Rigging)
  - PQS015 (Basic Rigging JPM)
  - CD002 (Cranes, principles of operation)
  - MED 20 or 21 and 22 (Med Exams)
  - MST240 (Fire Extinguishers)
  - CRN001 (Crane operator-OSHA regulations)
  - CRN002 (Signal/Spotter Course + JPM)



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- Equipment Checklist for the Equipment Make and Model
- State Licensing (examples include: above 15 ton crane capacity in PA)
- After 2014, appropriate NCCCO or equivalent specialty

### 9.0 COMPLIANCE AND EXCEPTIONS – N/A

### 10.0 ATTACHMENTS

- 10.1 Mobile Crane *Pre-Shift* Inspection Checklist (Attachment A)
- 10.2 Mobile Crane *Monthly* Inspection Checklist (Attachment B)

### 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

### 12.0 RECORD OF REVISIONS

Rev	01	Date	06/28/2017	Effective	06/28/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Revised to reflect the OSHA extension date for crane operator certification.			

Rev	00	Date	06/26/2012	Effective	06/26/2012
<b>Prepared by:</b>		David Hughes			
<b>Reviewed by:</b>		Jacque Creamer, Adam Frederick, Richard Horan			
<b>Approved by:</b>		Barry Downes			
<b>Revision Comments:</b>		Converted from General Safety Procedure to Electric Utilities Safety Procedure			



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**ATTACHMENT A - CRANE & DERRICK  
PRE-SHIFT INSPECTION CHECKLIST**

**Unit ID#** \_\_\_\_\_ **Date of inspection:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_ **Signature** \_\_\_\_\_

**If deficiency(s) are found:**

#1: Hang a Defective Tag on the crane or equipment.

#2: Contact the local PPL Transportation Department for repairs, after repairs are completed, they will sign off and place the crane back into service.

If any areas below are checked No, attach a Defective Tag to defective equipment (if applicable).

- **Note 1:** The crane may NOT be operated.
- **Note 2:** The crane may be operated only if an approved alternate means is used.
- **Note 3:** The crane may be operated only if it is determined by the crane operator that the condition does NOT present a safety concern for the job to be performed.

**Yes No N/A**

Note 1	Possess a Required Current Crane Operator Certification/State License/Specialty/Medical			
Note 1	Current Monthly and Annual Inspection Tag			
Note 1	Verify/Review Operators Manual Located on Crane			
Note 1	Verify Load Charts			
Note 1	Safety/Warning Decals: 1) are Legible; 2) Located at the Operator's Controls and Two are Located Outside the Crane			
Note 1	Verify Ground Stability			
Note 1	Verify Overhead Clearances			
Note 3	Barricade Counterweight Swing Area (Crush Zone)			
Note 1	Barricade Load Work Area			
Note 1	Verify Capacity of Hook/Load Block			
Note 1	Check the Hook Safety Latch Working Properly			
Note 1	Check Cable Keepers at Sheaves are in Good Condition			
Note 1	Check Main Hoist Wire/Synthetic Rope Condition (Per Inspection Criteria)			
Note 3	Check Auxiliary Hoist Wire Rope Condition (Per Inspection Criteria)			
Note 1	Check Standing Wire Rope Condition (Per Inspection Criteria)			
Note 1	Check Wire/Synthetic Rope End Fittings			
Note 1	Verify Correct Rope Spooling at Drums			
Note 1	Verify Sockets, Wedges and Clips are in Place and in Good Condition			
Note 1	Verify Drums and Drum Attachments are in Good Condition			
Note 2	Ensure Proper Operation of the Drum Rotation Sensor			
Note 2	Ensure the Load Moment Indicator is Operational			
Note 2	Verify the Anti Two-Block Device is in Proper Operation			
Note 1	Verify Working Level Indicator is Available (Permanently Mounted or Portable)			
Note 1	Check Foot Pedal Brake Lock			
Note 1	Verify Boom Stops			
Note 1	Verify Jib Stops			
Note 1	Horn (Permanently Mounted or Portable)			
Note 2	Check Boom Hoist Limiting Device			



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Note 2	Check Boom Angle Indicator			
Note 2	Check Boom Length Indicator			
Note 2	Check Load Weighing Device			
Note 1	Verify Outriggers Good Condition			
Note 1	Verify Outrigger Pads are Properly Mounted			



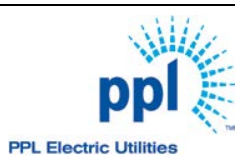


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		Yes	No	N/A
Note 1	Verify the Blocking/Cribbing are Properly Placed			
Note 1	Verify the Counterweights are in Place			
Note 1	Check Mounting Bolts are in Place and Properly Secured			
Note 1	Check Hydraulic Cylinders			
Note 1	Inspect Hydraulic, System Pumps, Motors and Controls			
Note 1	Check Hydraulic, System Fluid, Hoses			
Note 1	Verify Swing Controls, Clutch, Brake and Locking Mechanism Work Well			
Note 1	Verify Unrestricted Movement on All Controls			
Note 3	Check Carrier Vehicle Brakes			
Note 3	Check Carrier Vehicle Steering			
Note 3	Check Carrier Vehicle Tires, Wheels, Lugs			
Note 3	Check Transmission Oil			
Note 1	Check Engine Oil			
Note 3	Check Fuel System Leaks			
Note 1	Check Cooling Systems and Fluids			
Note 1	Check Electrical System and Batteries			
Note 1	Check Air System, Pumps, Reservoirs, etc.			
Note 1	Check Belts			
Note 1	Check Hoses			
Note 1	Check Handholds, Rails, Steps, Walkways			
Note 1	Check Guards and Covers			
Note 3	Check Lights			
Note 3	Check Heater and Defroster			
Note 3	Check Windshield Wipers			
Note 3	Check Windows			
Note 1	Fire Extinguisher Mounted and Inspection Up-to-Date			
Note 1	Check Load Chart			
Note 1	Check Hand Signal Chart			
Note 3	Check Mirrors			
Note 3	Check Cab and Housekeeping			
Note 1	Check for Unauthorized Modifications			
<b>FOR LATTICE BOOM CRANES USE THESE ADDITIONAL CHECKS</b>				
	Check Boom Hoist Rope Condition			
	Check Boom and Jib Pendants			
	Check Boom and Jib Sockets and Wedges			
	Check Boom Lock Device (Pawl/Dog)			
	Check Foot Pedal Brake Lock			
	Check Crawler Chain, Track and Rollers			
	Other			
<b>FOR HOISTING WORKERS USE THESE ADDITIONAL CHECKS</b>				
	Conduct a Load Test of the Lifting Basket			
	Conduct Trial Lift Without Workers in the Lifting Basket (Lift Must Start From Ground Level to Work Location)			





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Workers, Tools and Materials Weigh Less than 50% of the Rated Capacity for the Crane's Position			
Number of Workers Meet the Manufacturers Recommendation for the Basket			
Wire Rope Bridle, Each Bridle Leg is Connected to a Master Link or Shackle. Load is Evenly Distributed			
Fall Protection is Worn and Attached to the Basket (Except When Working Over Water, a Personal Flotation Device is Worn)			



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**ATTACHMENT B - CRANE & DERRICK  
MONTHLY INSPECTION CHECKLIST**

**Unit ID#** \_\_\_\_\_ **Date of inspection:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_ **Signature** \_\_\_\_\_

**If deficiency(s) are found:**

#1: Hang a Defective Tag on the crane or equipment.

#2: Contact the local PPL Transportation Department for repairs, after repairs are completed, they will sign off and place the crane back into service.

If any areas below are checked No, attach a Defective Tag to defective equipment (if applicable).

- **Note 1:** The crane may NOT be operated.
- **Note 2:** The crane may be operated only if an approved alternate means is used.
- **Note 3:** The crane may be operated only if it is determined by the crane operator that the condition does NOT present a safety concern for the job to be performed.

		Yes	No	N/A
Note 1	Possess a Required Current Crane Operator Certification/State License/Specialty/Medical			
Note 1	Current Monthly and Annual Inspection Tag			
Note 1	Verify/Review Operators Manual Located on Crane			
Note 1	Verify Load Charts			
Note 1	Safety/Warning Decals: 1) are Legible; 2) Located at the Operator's Controls and Two are Located Outside the Crane			
Note 1	Verify Ground Stability			
Note 1	Verify Overhead Clearances			
Note 3	Barricade Counterweight Swing Area (Crush Zone)			
Note 1	Barricade Load Work Area			
Note 1	Verify Capacity of Hook/Load Block			
Note 1	Check the Hook Safety Latch Working Properly			
Note 1	Check Cable Keepers at Sheaves are in Good Condition			
Note 1	Check Main Hoist Wire/Synthetic Rope Condition (Per Inspection Criteria)			
Note 3	Check Auxiliary Hoist Wire Rope Condition (Per Inspection Criteria)			
Note 1	Check Standing Wire Rope Condition (Per Inspection Criteria)			
Note 1	Check Wire/Synthetic Rope End Fittings			
Note 1	Verify Correct Rope Spooling at Drums			
Note 1	Verify Sockets, Wedges and Clips are in Place and in Good Condition			
Note 1	Verify Drums and Drum Attachments are in Good Condition			
Note 2	Ensure Proper Operation of the Drum Rotation Sensor			
Note 2	Ensure the Load Moment Indicator is Operational			
Note 2	Verify the Anti Two-Block Device is in Proper Operation			
Note 1	Verify Working Level Indicator is Available (Permanently Mounted or Portable)			
Note 1	Check Foot Pedal Brake Lock			
Note 1	Verify Boom Stops			
Note 1	Verify Jib Stops			
Note 1	Horn (Permanently Mounted or Portable)			
Note 2	Check Boom Hoist Limiting Device			



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Note 2	Check Boom Angle Indicator			
Note 2	Check Boom Length Indicator			
Note 2	Check Load Weighing Device			
Note 1	Verify Outriggers Good Condition			
Note 1	Verify Outrigger Pads are Properly Mounted			



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		Yes	No	N/A
Note 1	Verify the Blocking/Cribbing are Properly Placed			
Note 1	Verify the Counterweights are in Place			
Note 1	Check Mounting Bolts are in Place and Properly Secured			
Note 1	Check Hydraulic Cylinders			
Note 1	Inspect Hydraulic, System Pumps, Motors and Controls			
Note 1	Check Hydraulic, System Fluid, Hoses			
Note 1	Verify Swing Controls, Clutch, Brake and Locking Mechanism Work Well			
Note 1	Verify Unrestricted Movement on All Controls			
Note 3	Check Carrier Vehicle Brakes			
Note 3	Check Carrier Vehicle Steering			
Note 3	Check Carrier Vehicle Tires, Wheels, Lugs			
Note 3	Check Transmission Oil			
Note 1	Check Engine Oil			
Note 3	Check Fuel System Leaks			
Note 1	Check Cooling Systems and Fluids			
Note 1	Check Electrical System and Batteries			
Note 1	Check Air System, Pumps, Reservoirs, etc.			
Note 1	Check Belts			
Note 1	Check Hoses			
Note 1	Check Handholds, Rails, Steps, Walkways			
Note 1	Check Guards and Covers			
Note 3	Check Lights			
Note 3	Check Heater and Defroster			
Note 3	Check Windshield Wipers			
Note 3	Check Windows			
Note 1	Fire Extinguisher Mounted and Inspection Up-to-Date			
Note 1	Check Load Chart			
Note 1	Check Hand Signal Chart			
Note 3	Check Mirrors			
Note 3	Check Cab and Housekeeping			
Note 1	Check for Unauthorized Modifications			
<b>FOR LATTICE BOOM CRANES USE THESE ADDITIONAL CHECKS</b>				
	Check Boom Hoist Rope Condition			
	Check Boom and Jib Pendants			
	Check Boom and Jib Sockets and Wedges			
	Check Boom Lock Device (Pawl/Dog)			
	Check Foot Pedal Brake Lock			
	Check Crawler Chain, Track and Rollers			
	Other			

**INSTRUCTIONS after filling out this form:**

#1: Date and sign the PPL Crane and Wire Rope Inspection Tag

#2: Send this original completed form to the local T&D Foreman to be filed for a period of three months.



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## **1.0 PURPOSE/SCOPE**

- 1.1. The purpose of this Safety Procedure is to provide all PPL Electric Utilities Corporation (EU) employees the appropriate contact information and communication path to follow for when –
  - a) A PUC (Public Utility Commission) safety employee(s) visit our site, or
  - b) A significant injury occurs (contractor, employee or public), or
  - c) When a customer contacts the PUC
- 1.2. PUC Safety Inspectors may conduct formal or informal inspections of our PPL facilities, employees, and contractors. These inspections may include:
  - 1.2.1 Auditing our work procedures.
  - 1.2.2 Conducting accident investigations for employee, contractor, or public injuries involving PPL EU facilities.
  - 1.2.3 Issuing order(s) at the job site (on the spot) or in writing requesting changes to be made to our electrical system.

## **2.0 RESPONSIBILITY**

### **2.1. Employees / Crews**

#### PUC Safety Inspector Visits Job Site:

- 2.1.1 The PUC Safety Inspector may stay at the job site to observe employees working.
- 2.1.2 Contact your supervisor.
- 2.1.3 Keep the PUC Safety Inspector safe.
- 2.1.4 Obtain the PUC Safety Inspector's name and office information. After introducing themselves, the PUC Safety Inspector will inform you of a possible immediate inspection and/or may begin with some inquiries about the job.

Note: DO NOT provide written materials unless authorized to do so by your supervisor, safety, or PPL Office of General Counsel.



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PUC Safety Inspector visits Fixed Work Location (Office Building):

- 2.1.5 Ask for identification. Upon verification of identification, ask the PUC Safety Inspector the purpose of their visit.
- 2.1.6 Contact your supervisor and EU Safety Department (Technical Development & Improvement) at 484-661-4200. Inform them of the visit and the purpose.

Note: DO NOT provide written materials unless authorized to do so by your supervisor, safety, or PPL Office of General Council.

Significant On-the-job Injury Occurs:

- 2.1.7 Contact the Distribution Control Center (DCC) immediately in the event of an injury or electrical contact. Be prepared to answer the following questions:

- Time of accident
- Name of employee
- Age
- Address
- Company name & address
- What work was being done and what happened
- Hospital name

- 2.1.8 Injury/Contact Involving PPL Facilities:

2.1.8.1 Transmission System Operator (TCC) or Distribution System Operator (DCC) employees must follow SOP-0018 [Notification Procedure - Injury/Contact Involving PPL Facilities](#)

2.1.8.2 All other employees must follow Safety Procedure 31 [Incident Reporting and Analysis Process](#).

**2.2. Supervisors / Managers**

PUC Safety Inspector Visits Job Site or Office Building:



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2.2.1 If contacted by an employee informing you that the PUC Safety Inspector is at your job site or office building, ensure that employees obtain the following information from the PUC Safety Inspector:

2.2.1.1 Request identification.

2.2.1.2 Ask the PUC Safety Inspector the purpose of their visit.

2.2.2 Follow PUC Site Visit workflow (Appendix A).

Significant On-the-job Injury Occurs:

2.2.3 Communicate to all employees the importance of contacting the Distribution Control Center (DCC) immediately in the event of an injury or electrical contact.

2.2.4 Notify an EU Safety Professional or Safety Manager. The PUC Safety Inspector may inquire about an accident or event. If asked, give as much information as possible to the EU Safety Professional.

2.2.5 If significant Injury Occurs to PPL Employee follow Safety Procedure 31 [Incident Reporting and Analysis Process](#).

2.2.6 If significant Injury to Contractor, follow the [PPL Electric Utilities Contractor Reporting Procedure](#).

**2.3. Electric Utilities (EU) Health & Safety Department (Safety Manager)**

2.3.1 Will work with PPL's Office of General Counsel (OGC) before providing information to the PUC Safety Inspector.

2.3.2 Accountable for the process described within this safety procedure.

2.3.3 Responsible to ensure that this process is applied as intended and assistance is provided, upon request.

2.3.4 Ensure compliance with PUC regulatory requirements as it pertains to safety.

2.3.5 Act as the single point of contact for all PUC safety inspections.

2.3.6 Maintain a master list of all PUC safety inspections and any directives. Add to the list names of employees responsible for initiating any directives by the PUC.





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### **3.0 APPLICABILITY**

- 3.1. PUC Safety Notification Process applies to all PPL Electric Utilities employees, contactors and general public who are directly or indirectly involved in an injury or fatality involving contact with PPL EU facilities.
- 3.2. PUC Notification Process may also include planned and unplanned PUC on-site visits.
- 3.3. Events that involve the general public, a contractor or occur on PPL property must be reported in accordance with the [OGC - Claims Instruction No. 3 Reporting Accidents Involving Injury to Non-employees](#)

### **4.0 TERMS AND DEFINITIONS**

- 4.1 **PUC Safety Inspector** – Is a person who is employed by the Public Utility Commission to inspect all Electric Utilities' electric supply equipment and operators (employees) to ensure the safety of employees, contractors, and the general public. Click here to view the [PUC Organizational Chart](#).

PUC Safety Inspectors may review, at any time, PPL EU's standard practices and records concerning design, construction, operation, maintenance, inspection, and emergency procedures.

### **5.0 MAIN BODY**

PUC visits job site or significant injury occurs to contractor, employee or public:

- 5.1 Refer to PUC Site Visit workflow (Appendix A), and PUC Nonfiction Process Plan (Appendix B).

Customer contacts the PUC

- 5.2 If a customer contacts the PUC, the following steps must be taken:
  - 5.2.1 PUC documents the complaint and assigns a case number.
  - 5.2.2 PUC case is then sent to PPL.
  - 5.2.3 PPL adds suspend charge to the customer's account – PUC Informal – Case has a 30 day due date from the date received. Meter is Off Cases – 5 day response time.
  - 5.2.4 Case is then assigned to a Quality Assurance (QA) Specialist.
  - 5.2.5 QA Specialist researches and documents the response.



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- 5.2.6 Letters and a Statement of Account are electronically attached to the case.
- 5.2.7 Case is reviewed for quality, and attachments are filed electronically by Steno Clerk. Case is then sent to the PUC with attachments.
- 5.2.8 PPL reviews case and renders a decision.
- 5.2.9 PPL contacts the customer by phone or letter with the decision. (PPL sends PPL the case with the decision).
- 5.2.10 PPL reviews decisions, and removes the PUC Informal suspend charge and documents the decision.
- 5.2.11 If an Action is needed, the QA Specialist will ensure action documented and forwarded to the proper area.
- 5.2.12 Customers have 30 days to appeal the PUC decision.

## **6.0 REFERENCES**

- 6.1 [SOP 018 - Notification Procedure - Injury / Contact Involving PPL Facilities](#)
- 6.2 [Safety Procedure #31 - Incident Reporting & Analysis Process](#)

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 Policy was developed based on PUC requirements.

## **8.0 TRAINING / SAFETY – N/A**

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

## **10.0 ATTACHMENTS**

- 10.1 Appendix A – PUC Formal and Informal Site Visits
- 10.2 Appendix B – PUC Notification Process Plan



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## 11.0 RECORD RETENTION

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

## 12.0 RECORD HISTORY

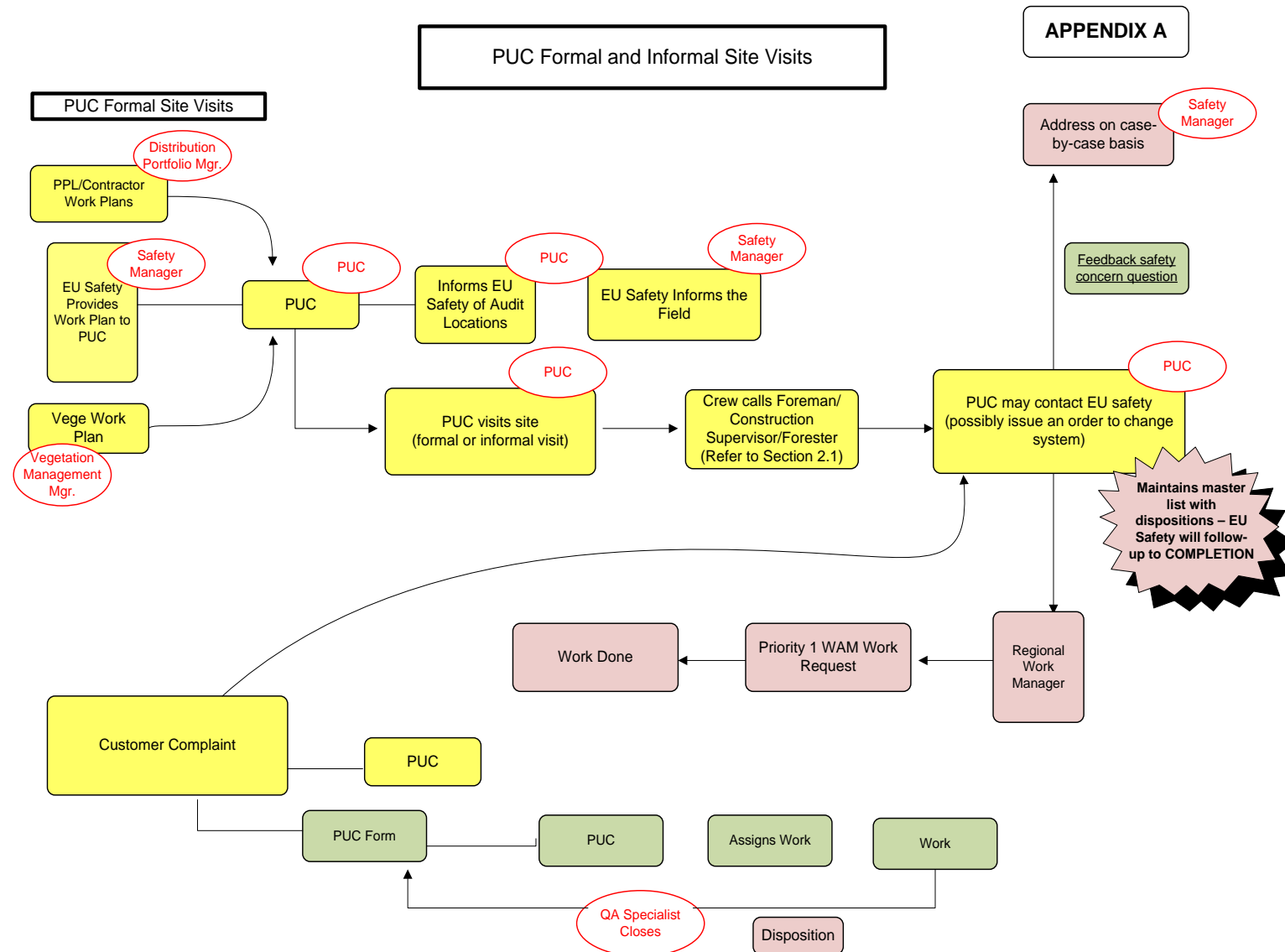
<b>Rev</b>	01	<b>Date</b>	4/27/2017	<b>Effective</b>	05/01/2017
<b>Prepared by:</b>		Deborah A. Sweinhart, Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts.			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Included links and revised review dates. No other changes.			


<b>Rev</b>	00	<b>Date</b>	08/20/2014	<b>Effective</b>	08/20/2014
<b>Prepared by:</b>		Deborah A. Sweinhart, Project Manager Health & Safety			
<b>Reviewed by:</b>		Jacque Creamer/Project Manager-Health & Safety, Jared Dyer/Health & Safety Specialist, Richard Horan/Sr Health & Safety Specialist, Brian Kostik/Sr Health & Safety Specialist, Jeff Monsell/Project Manager-Health & Safety, Paul Ward/Director TDI, Kathy Frazier/Regulatory Affairs Manager, Shawn Cappellano-Sarver/Manager-Distribution Operations, Dennis Knepper/Director Operations, Paul Russell/General Counsel, Damon Obie/Sr. Counsel, OGC,			
<b>Approved by:</b>		Brian Zickefoose, Manager Health & Safety-EU			
<b>Revision Comments:</b>		Developed due to new PUC regulatory requirements			



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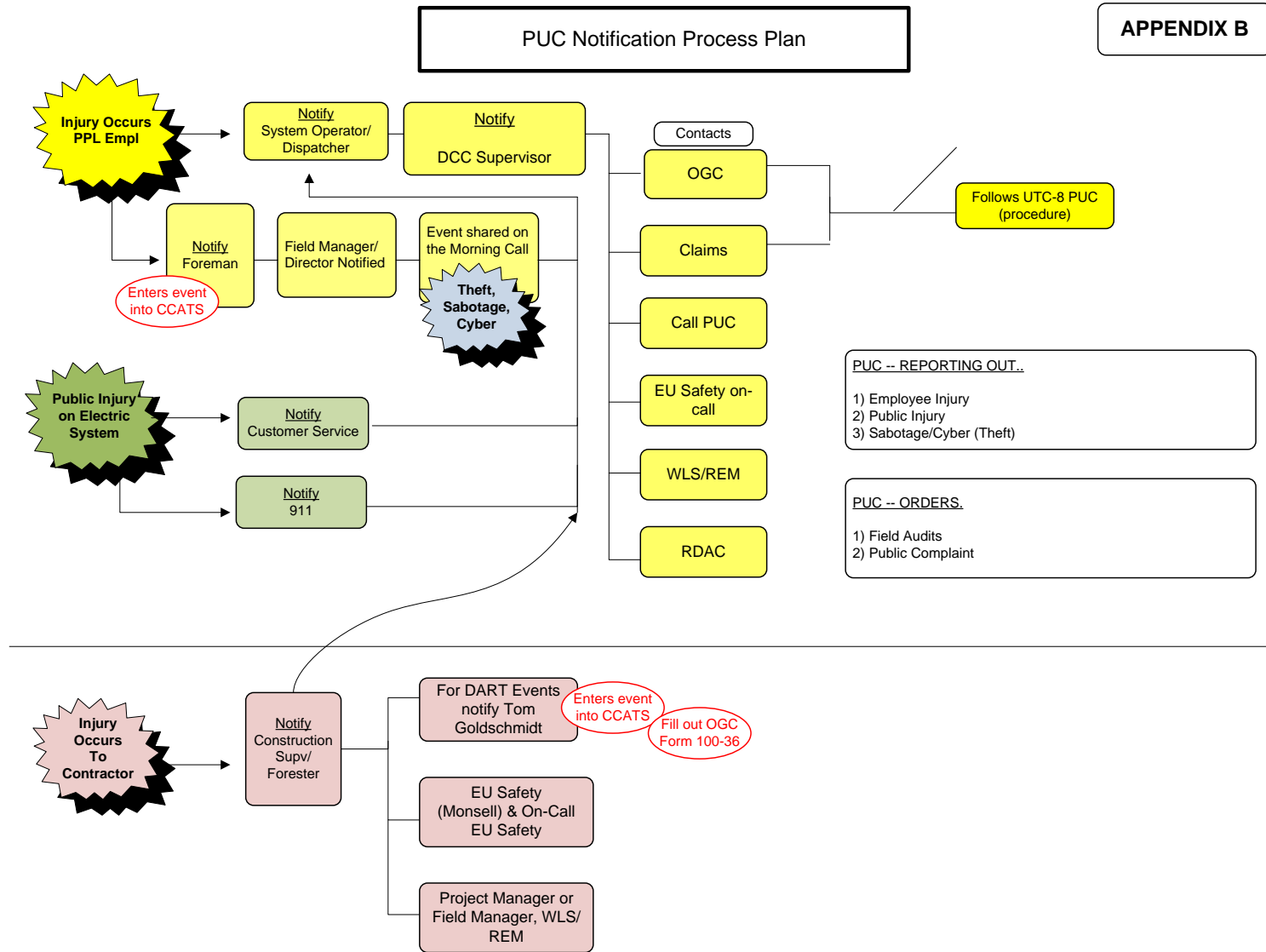
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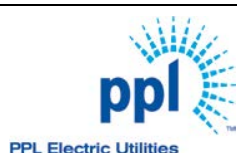




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2. Hold **Alt** then press **←** (back arrow) to go to last place viewed in the PDF (for most office laptops).

Press and hold “**Ctrl** and **F**” to search keywords in the PDF.

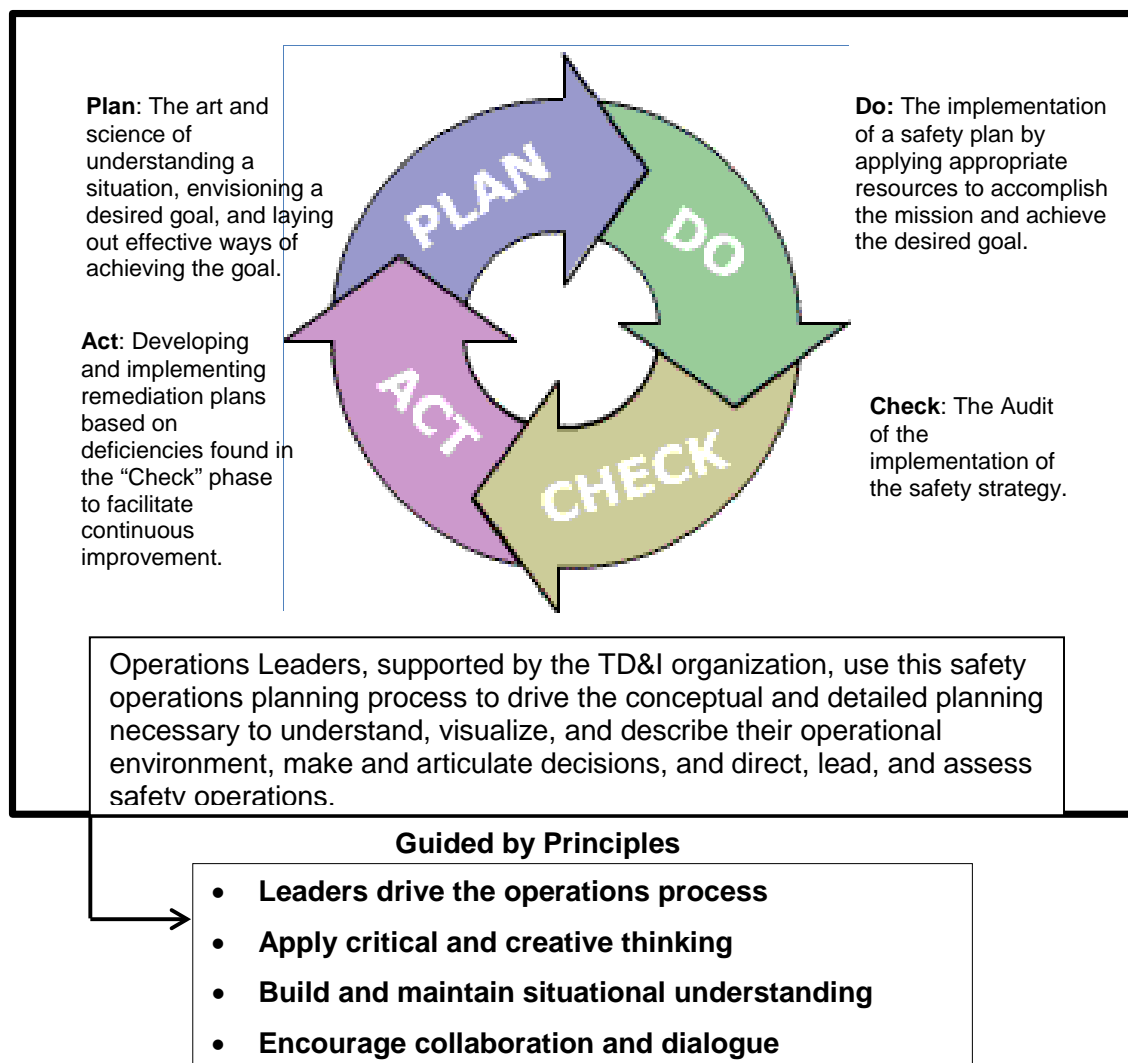


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## 1.0 PURPOSE/SCOPE

- 1.1 The primary purpose of this Safety Procedure is to provide guidance and instructions for Directors and Managers to carry out PPL EU's safety operations planning process of PLAN – DO – CHECK – ACT. This safety operations planning process identifies the strategic, operational and tactical functions that achieve the corporate safety goals at PPL EU. This model and its associated method of executing Safety Plans shall be implemented across PPL EU to reduce the risk of occupational injuries, illnesses, and fatalities.
- 1.2 These processes shall guide the Annual Safety Operations Planning Process that shall formally occur each calendar year at PPL EU as well as any identified safety strategy changes during the year that need to be implemented immediately.
- 1.3 PPL EU's framework for executing Safety Plans organizationally shall be the safety operations planning process as depicted in [Figure 1](#).



**Figure 1. "Plan-Do-Check-Act" Safety Operations Planning Process**



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## **2.0 RESPONSIBILITY**

### **2.1 Senior Leadership**

- 2.1.1** Consists of PPL EU's President and Vice Presidents.
- 2.1.2** Provides clear guidance to TD&I Leadership and Directors and Managers throughout the safety operations planning process, as needed.
- 2.1.3** Allocates resources as needed to ensure that safety strategies are successfully implemented throughout PPL EU.
- 2.1.4** Approves the final Safety Plan at end of "Plan" phase.
- 2.1.5** Reviews the annual Safety Plans after implementation and recommends improvements to ensure its continued progress.
- 2.1.6** Provides a renewed Safety Commitment Letter each year.

### **2.2 Operations Leadership (Sponsors)**

- 2.2.1** Operations Leadership consists of Directors, Managers, Field Managers, and some Project Managers in the following PPL EU groups:
  - a. **Distribution Operations** – Directors, Managers, Field Managers, Project Managers
  - b. **Transmission & Substations** – Directors, Managers, Field Managers, Project Managers
  - c. **Customer Service** – Directors, Managers
  - d. **Procurement** – Directors, Managers
- 2.2.2** Sponsors can be any individual or group of individuals that wants to implement specific safety strategies at PPL EU.
- 2.2.3** Attends all strategy and review sessions.
- 2.2.4** Works with Senior Leadership and TD&I Leadership for guidance and approval of the final Safety Plan.
- 2.2.5** Works with Supervisors and individual contributors (lower levels of management) to implement specific Safety Plans.
- 2.2.6** Responsible to plan, implement, audit and continuously improve the annual Safety Plan.
  - a. Schedules the annual Safety Strategy Sessions
  - b. Researches and provides critical information collected annually within their own departments to stakeholders, as outlined in the Research section of this procedure
  - c. Responsible to execute Safety Plan and maintain communication with PPL EU Operations and TD&I leadership to ensure safety strategies are aligned.
  - d. Reports impacts to TD&I Leadership and Manager of Health & Safety, such as contingencies to the schedule or budget, and revises plan as needed.
  - e. Audits metrics and processes of the implemented Safety Plan on a monthly basis.





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- f. Implements changes and corrections to the Safety Plan specified in the Check phase results.

**2.2.7** Participates in other activities of the Plan-Do-Check-Act cycle, as needed.

**2.3 TD&I Leadership (Agents)**

**2.3.1** TD&I Leadership consists of the following positions in the Health & Safety, Environmental Compliance, Work Methods, and Training groups:

- Directors, Managers, Supervisors, Project Managers/Safety Specialists

**2.3.2** Attends all strategy and review sessions.

**2.3.3** Works with all levels of management to support implementation of specific Safety Plans.

**2.3.4** Can assign safety objectives and/or strategies to any individual, committee, group, or department for implementation at PPL EU.

**2.3.5** Conducts site inspections of actual execution of Safety Plan processes to verify Worker compliance with safety rules, regulations and procedures, as appropriate.

**2.3.6** Supports implementation of Safety Plans and maintains communication with PPL EU Operations and Senior Leadership to ensure safety strategies are aligned.

**2.3.7** Responsible to support the planning, implementation, audit and continuous improvement of the annual Safety Plans:

- a. Researches and provides critical information collected annually within their own departments to stakeholders, as outlined in the Research section of this procedure
- b. Provides guidance to Directors and Managers regarding effective Safety and Training strategies to meet the objectives and processes of the Safety Plan.
- c. Develops all new Trainings, Procedures, DDIs and other communications related to the annual Safety Plans.
- d. Identifies impacts to all existing Training, Safety, Environmental and Work Methods communications related to the annual Safety Plans.
- e. Evaluates the impacts/improvement of the safety objectives and processes on TD&I performance levers.
- f. Communicates needed changes to the Safety Plan (after the Check phase) to all stakeholders.

**2.3.8** Participates in other activities of the Plan-Do-Check-Act cycle, as needed.

**2.4 Supervisors and Individual Contributors Targets**

**2.4.1** Implement the individual processes identified in the approved Safety Plan to meet the safety objectives.

**2.4.2** Participate in all phases of the Plan-Do-Check-Act cycle, as needed.

**2.4.3** Supervisors and Foremen participate in the following ways:

- a. Attend and participate in their organizational strategy sessions, when assigned.



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- b. Implement their organization's specific Safety Plans down through the individual contributor level.
- c. Implement the safety operations planning process in the day-to-day work life at PPL EU.

**2.4.4** Individual Contributors who report directly to Supervisors and Foremen:

- a. Attend all required Training.
- b. Carry out the safety operations planning process in the day-to-day work life at PPL EU by following all implemented safety rules and procedures.

**2.5 Manager of PPL EU Health & Safety**

- a. Owner of the safety operations planning process.
- b. Responsible to confirm scheduling of Annual Safety Strategy Sessions.
- c. Provides the relevant communications about changes/updates to the Safety Plans to the PPL EU organization.
- d. If needed, coordinates midyear strategy sessions, depending on current safety performance of the organization.

**3.0 APPLICABILITY**

- 3.1** All PPL EU Departments on the Operations level of management, including all Directors and Managers, are required to follow the processes in this procedure.

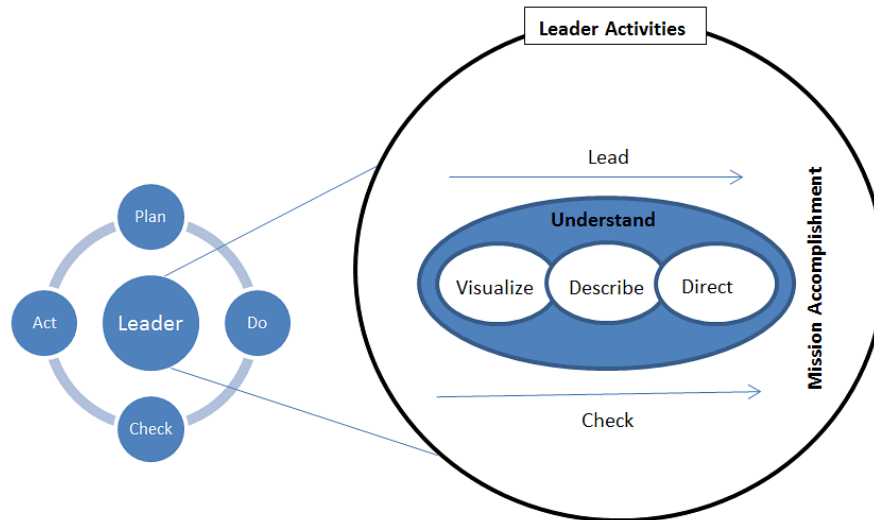
**4.0 TERMS AND DEFINITIONS**

- 4.1 Annual Safety Strategy Sessions** – Annual meetings where safety objectives and strategies for implementation are determined for the following year.
- 4.2 CCATS** – Corporate Corrective Action Tracking System – The electronic information system where all corrective actions are entered and tracked.
- 4.3 Contingencies** – Future events or circumstances that are possible but cannot be predicted with certainty. Projects should always have contingency plans, especially for possible events, situations or outcomes that can affect the plans as a whole.
- 4.3.1** An example of a contingency would be planning for storms that can impact the Safety Plan's implementation schedule.
- 4.4 Operations Leadership (Directors/Managers)** – Mid-level PPL EU Management that drives the safety operations planning process by designing, overseeing and controlling the process.
- 4.5 Occupational Safety and Health Administration (OSHA)** – Congress created OSHA to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. OSHA is part of the United States Department of Labor.
- 4.6 Plan-Do-Check-Act** – PPL EU's safety operations planning process is a unified corporate approach to developing and implementing safety strategies (Figure 2). The Plan-Do-Check-Act cycle is a four-phase model for carrying out change. Just as a circle has no end, the PDCA cycle should be repeated again and again for continuous improvement.




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**Figure 2. “Plan–Do–Check–Act” – Leader Activities**

- 4.6.1 “PLAN”** – This phase includes gathering facts and data, and identifying specific tasks, implied tasks and assumptions to develop the operational plan.
- 4.6.2 “DO”** – This phase is the implementation phase and moves a plan into action by applying the appropriate resources and organizational structures to accomplish the mission and vision.
- 4.6.3 “CHECK”** – This phase is the audit of the implementation of the plan (done in the “Do” phase).
- 4.6.4 “ACT”** – This phase is the development and implementation of remediation plans based on the deficiencies found in the “Check” phase.
- 4.7 Public Utilities Commission (PUC)** – The Public Utility Commission is a regulatory agency created under Act 43 of 1937 to better supervise and regulate all public utilities. The Pennsylvania PUC supervises and regulates all public utilities doing business in the Commonwealth of Pennsylvania.
- 4.8 Safety Objective** – A specific result that a person or organization aims to achieve with available resources within a defined time frame.
- 4.9 Safety Operations Planning Process** – The Plan-Do-Check-Act process model for developing, implementing, auditing and revising Safety Plans at PPL EU at the operational level.
- 4.10 Safety Plan** – The approved safety objectives and safety processes to be implemented for the following year. The Safety Plan is the end result of the “Plan” phase.
- 4.11 Safety Strategy** – A long-term (3-5 years) plan or method to achieve a particular safety goal.
- 4.12 Senior Leadership** – (President and Vice Presidents) – Upper level management that approves, guides and allocates resources to support the Safety Strategy implementation process.
- 4.13 SAT Leadership** – Sponsors, Agents and Targets

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- 4.13.1 Sponsor** – Operations Managers/Leaders who drive the safety plan and who are ultimately accountable for their organization's safety performance.
- 4.13.2 Agent** – Leaders and organizations who carry out individual tasks to facilitate safety strategies and plans, such as TD&I Leadership.
- 4.13.3 Target** – Individuals and Groups who implement and carry out tasks that meet the objectives of the implemented safety strategy and/or plan. Targets are the individuals or groups that must change for realization of safety goals to be achieved.



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## 5.0 MAIN BODY

The safety operations planning process described in this section includes details for the Plan-Do-Check-Act process. This section is organized as follows:

- **5.1 - PLAN** – Identifying Safety Objectives and Strategies
- **5.2 - DO** – Implementing Safety Objectives and Strategies
- **5.3 - CHECK** – Auditing the Safety Implementation Process
- **5.4 - ACT** – Responding to Results of the Auditing Process
- Refer to **Attachment A** (work flow diagram) for an overview of the Plan-Do-Check-Act process.

### 5.1 “PLAN” – Identifying Safety Objectives and Strategies

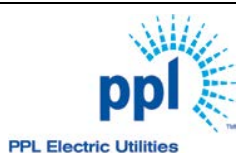
**5.1.1** PPL EU Operations/TDI Leadership Meet with Senior Leadership to receive planning guidance.

**5.1.2** Project Basics: Timelines/Schedules and Team Members

The recommended timeline for the planning phase to develop the annual safety objectives and strategies is as follows:

#### 1. Timeline & Schedules

- **September** – Annual Safety Planning Activities – This is the research period when data is collected prior to the strategy sessions.
- **No later than October 31** – Annual Safety Strategy Session – The meetings where data from the research phase is shared and safety objectives for the coming year/period are determined. The main deliverable is the planning guidance document that details the critical objectives, measurements of success, and drafted initiatives that improve the critical objectives. The following is critical to the Planning process and may be done as part of a multiday meeting or as individual meetings:
  - Safety Strategy Sessions and locations are planned annually and well in advance.
  - Operations Managers/Leaders schedule location and time of strategy session.
  - TD&I and Operations Managers/Leaders are expected to make these sessions a high priority in their management roles.
  - TD&I and Operations Managers/Leaders can send a proxy only in the event of emergencies (personal and/or work-related).
- **No later than November 15** – Safety Strategy Review with Senior Leadership – Operations Managers/Leadership and TD&I Leadership provide the safety strategy brief to Senior Leadership to gain final approval.
- **No later than December 15** – Safety Strategy and Training Schedule are Communicated to Organizations – Safety plans and training are scheduled



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and communicated to the organization to drive all organizational goals pertaining to safety for the coming year. Employee safety goals are established from the developed Safety Plan.

- **January through September** – Collection of Safety Data – The period during which safety-related data is collected and entered in CCATS. The data is evaluated at the end of this period for the following year's Annual Safety Strategy Session.

2. Team Members are identified from the following departments:

- Distribution Operations (Directors, Managers, Field Managers)
- Transmission & Substations (Directors, Managers, Field Managers)
- TD&I (Directors, Managers)
- Facilities Management (Directors, Managers)
- Customer Service (Directors, Managers)
- Procurement (Directors, Managers)

### 5.1.3 Research

The following data must be gathered and evaluated for all of PPL EU prior to the Strategy Session(s):

1. Causes and numbers of injuries and illnesses (previous year at least, and current year)
2. Previous year's Safety Plan and analysis of successes and improvement opportunities
3. Previous years' Audit findings
4. Employee survey feedback, including:
5. Safety Committee feedback
6. Culture Survey feedback
7. Safety Survey feedback
8. Benchmark data from all Groups
9. Recent Regulatory (OSHA) and Public Utility Commission (PUC) changes

### 5.1.4 Strategy Session(s)

The goals of the Strategy Session are to develop and finalize Safety Objectives (the "What") and Safety Plans (the "How") and their associated metrics.

1. **Develop & Finalize Safety Objectives (the "What")** – Based on research, dialog, and discussions in the strategy sessions, Safety Plan objectives are identified and chosen.
  - These objectives are the roadmap (the 'What') of the Safety Plans that will be developed by Directors and Managers in the "Do" phase.
  - Other objectives that are identified can be integrated at a later date. Examples of Safety Plan objectives can be:



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- Reduce soft tissue injuries by 20 percent from previous years
- Reduce reportable vehicle accidents by 20 percent from previous years
- Other major milestones are incorporated in the schedule, including key milestones in the “Do”, “Check” and “Act” phases.
- Schedule is communicated to team members immediately.

**2. Develop & Finalize Safety Plans (the "How")** – Based on research, dialog, and discussions in the Strategy Sessions, Safety Plans are created that implement the safety objectives.

- Directors and Managers further develop initiatives to implement the identified Safety Plan objectives, including training requirements for the proposed plans.
- These initiatives become the roadmap of the Annual Safety Plans for the departments and/or regions.
- The Technical Development & Improvement (TD&I) group simultaneously addresses the following performance levers and how these are impacted/improved by the identified safety objectives and plans:
  - Aligning Safety Objectives with Corporate Goals & Planning
  - Committees
  - Safety Procedures & Work Instructions
  - Training
  - Communication
  - Monitoring/Analyzing/Reporting
  - Industrial Hygiene
  - Incident Reporting and Investigation
  - Information Systems

**5.1.5 Review & Approve Safety Objectives/Safety Plans with Senior Leadership** – Senior Leadership, TD&I Leadership, and Operations Leadership review the results of the Strategy Sessions:

1. Operations Managers/Leaders explain the requirements for any organizational and departmental changes based on research.
2. Senior Leadership provides guidance as to which safety objectives (the “What”) are approved.
3. TDI and Operations Leadership review the Safety Plans (the “How”) with Senior Leadership.
4. Senior Leadership makes a final decision to approve or requests a rework of the plans.





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5. These steps are repeated until Senior Leadership approves the plans.

**5.1.6 Identify & Finalize Training Requirements**

1. Directors and Managers identify the types of Training to be implemented based on the Safety Plan requirements.
2. TD&I Leadership recommends the types of Training to be implemented based on the Safety Plan requirements.
3. Operations Leadership approves the finalized Training Plan.

**5.2 “DO” – Implementing Safety Objectives and Strategies**

All of the objectives and strategies finalized in the “Plan” phase are now moved into the implementation phase.

- These Safety Plans are rolled out by the Operations Leadership (Sponsors) to their respective Supervisors and Individual Contributors (Agents).
- Sponsors and Agents further develop the plans through collaborative efforts by focusing on the mechanics (the “How”) of implementing the Safety plans.
- Plans are then rolled out to Target (worker) groups by each respective Director and Manager.
- The “Do” phase requires the following actions, listed in chronological order:


**5.2.1 Execute the Companywide Communication Plan**

1. A communication is generated to all affected departments at PPL EU:
2. Supervisors and Foremen and other lower level managers directly engage worker groups to execute the plan:
  - Notifications
  - Meetings
  - Demos
  - Training: using new processes, tools, methods, etc.

**5.2.2 Implement the Safety Plans (Agents & Targets)**

1. Directors and Managers assign responsibilities for each initiative. (These responsibilities may have been identified in the “Plan” phase.)
2. Supervisors and Foremen and other lower level managers directly engage worker groups to execute the plan:
3. TDI develops or revises Training, Procedures, Distribution Department Instructions (DDI) and other identified materials per the Safety Plans immediately after the “Plan” phase is approved and completed.
  - Sponsors and Agents collaborate with Training to address new training methods and any existing training that may need to be reviewed/revised.



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- Identify impacts to existing safety information such as Safety Procedures, Safety Rule Book, Safety Memos, etc.
- The types and details of recommended training shall be communicated to the Manager of Health & Safety as early as possible

#### **5.2.3 Monitor Safety Plan Implementation & Address Contingencies (Sponsors)**

1. For each initiative, Sponsors meet with their respective Agents for regular updates about implementation activities that can impact the schedule and/or the budget.
2. Sponsors also stay alert for any contingencies that could or already have occurred.
3. For example, Sponsors and Agents keep aware of industry and PPL EU events, near misses, Good Catch program, Regulatory changes or new/revised PUC guidance.
4. If there are no impacts to the plans, activities continue as scheduled.

#### **5.2.4 Communicate Contingencies to Organization and Update Plans as Needed (Sponsors)**

1. If events occur, Directors and Managers communicate impacts to the organization as appropriate and revise the plans as needed.

#### **5.2.5 Update Safety Information as Needed (Agents) – If events occur, Agents update the applicable safety information documentation, including but not limited to:**

1. Engineering Standards
2. Work Methods/Distribution Department Instructions (DDI)
3. Training
4. Safety Procedures (SP), Environmental Procedures, Work Method Procedures
5. Safety Alerts/Memos
6. Work Method Bulletins/Communications
7. Foremen Communication Tools

#### **5.2.6 Communicate Updated Safety Information to Organization (TD&I) as Needed**

1. If contingencies have impacted safety information media such as those listed above, the Manager of Health & Safety provides the relevant communications about the updates to the organization.



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### **5.3 “CHECK” – Auditing the Safety Implementation Process**

There are two review/audit components to the Check process:

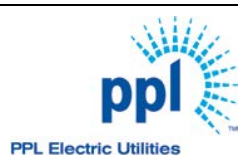
- Monthly reviews of the Safety Plan by the Sponsors
- The annual comprehensive review done by the Agent (TDI)

#### **5.3.1 Monthly Reviews**

1. Each month after the Safety Plans are implemented, the Check cycle is initiated and managed by the Sponsor.
2. The actions and steps summarized in this section help to determine the audit criteria to be used in the “Check” process.
3. The following actions are required in the “Check” phase:
  - **Identify Target Group** – A safety objective/safety plan shall be audited monthly after it is implemented to determine its effectiveness.

#### **5.3.2 Annual Reviews**

1. **Identify Target Group** – A safety plan shall be audited annually after it is implemented to determine its effectiveness.
2. **Develop Audit Criteria** – Audit processes shall be established to achieve the overall objectives of the Safety Plans:
  - Once a Target is identified, the data from previous Safety Plans (aimed at the same safety objective) is reviewed, and a plan is devised to best check whether the plan is operating successfully.
  - Metrics based on the specific safety objectives shall be summarized and evaluated.
3. **Review & Evaluate** – The implemented Safety Plan initiatives shall be reviewed and evaluated.
4. **Collect Information** – Information can be collected as follows:
  - Survey the work group for specific and miscellaneous feedback
  - Review summary of the number and nature of incidents reported
  - Compile changes to the process since the safety objective was implemented
  - Obtain data from near misses, good catches, safety alerts/memos, TD&I Bulletins, etc.



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**5.3.3 Choose Type of Audit (Internal/External)**

1. Internal audits will be done by Directors and Managers or assigned Agents, as outlined in this procedure.
2. External audits will be done by third-party contractors/vendors, as required.

**5.3.4 Create Project Plan for Audit**

1. Identify Audit Team
2. Develop Audit Schedule/Timeline and key Milestones
3. Develop and finalize Audit deliverables.

**5.3.5 Perform Audit**

1. Conduct site inspections and review metrics against objectives and processes in the Safety Plan.
2. Conduct interviews with Directors and Managers.
3. Identify and document gaps.
4. Summarize and evaluate Audit findings.

**5.3.6 Perform Audit Review with Senior Leadership** – Audit findings are reviewed and discussed.

1. Results and action items from the management review shall be documented, communicated to Directors and tracked to completion.

**5.3.7 Present Findings to Target Group**

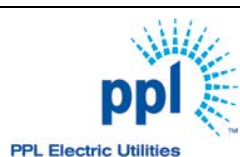
1. Extent to which objectives have been met are reviewed with Target leaders.
2. Gaps are reviewed with Target group leaders.
3. Target date set for corrected steps to be fully implemented.

**5.4 “ACT” – Respond to Results of the Audit and Sr. Leadership Review**

**5.4.1** After the Audit findings have been published, the Sponsor collaborates with Supervisors and Individual Contributors to develop remediation plans.

**5.4.2** Update the Safety Plans with Corrected Steps

1. Action items shall be developed from the findings of the Audit review.
2. Results and action items from the Audit review shall be documented, communicated to affected individuals, and tracked to completion.
3. TD&I Leadership is consulted as necessary.



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**6.0 REFERENCES – NA**

**7.0 TRAINING – NA**

**8.0 REGULATORY REQUIREMENTS – NA**

**9.0 COMPLIANCE AND EXCEPTIONS – NA**

**10.0 ATTACHMENTS**

**10.1 Attachment A** – Safety Operations Planning Process Flowchart

**11.0 RECORD RETENTION**

**11.1** Record retention shall be consistent with the PPL Corporate Records Management Project Retention Schedule.

**11.2** This document shall be reviewed every 5 years by Safety Operations.

**11.3** The review shall be facilitated by the Records Management Coordinator.

**12.0 RECORD OF REVISIONS**

<b>Rev</b>	01	<b>Date</b>	07/01/2017	<b>Effective</b>	07/06/2017
<b>Prepared by:</b>	Deborah A. Sweinhart, Safety Program Specialist				
<b>Reviewed by:</b>	Safety Pros – Jared Dyer, Dalton Shorts, Brian Kostik, Elizabeth McKay, Steve Mondschein				
<b>Approved by:</b>	Brian Matweecha				
<b>Revision Comments:</b>	Reviewed for department changes, and other internal changes. Included missing Attachment A.				

<b>Rev</b>	00	<b>Date</b>	11/10/2014	<b>Effective</b>	05/8/2015
<b>Prepared by:</b>	Brian Zickefoose				
<b>Reviewed by:</b>	Rich Horan, Brian Kostik, Jared Dyer, Deborah Sweinhart, Jacque Creamer, Jeff Monsell				
<b>Approved by:</b>	Brian Zickefoose				
<b>Revision Comments:</b>	Initial Procedure				

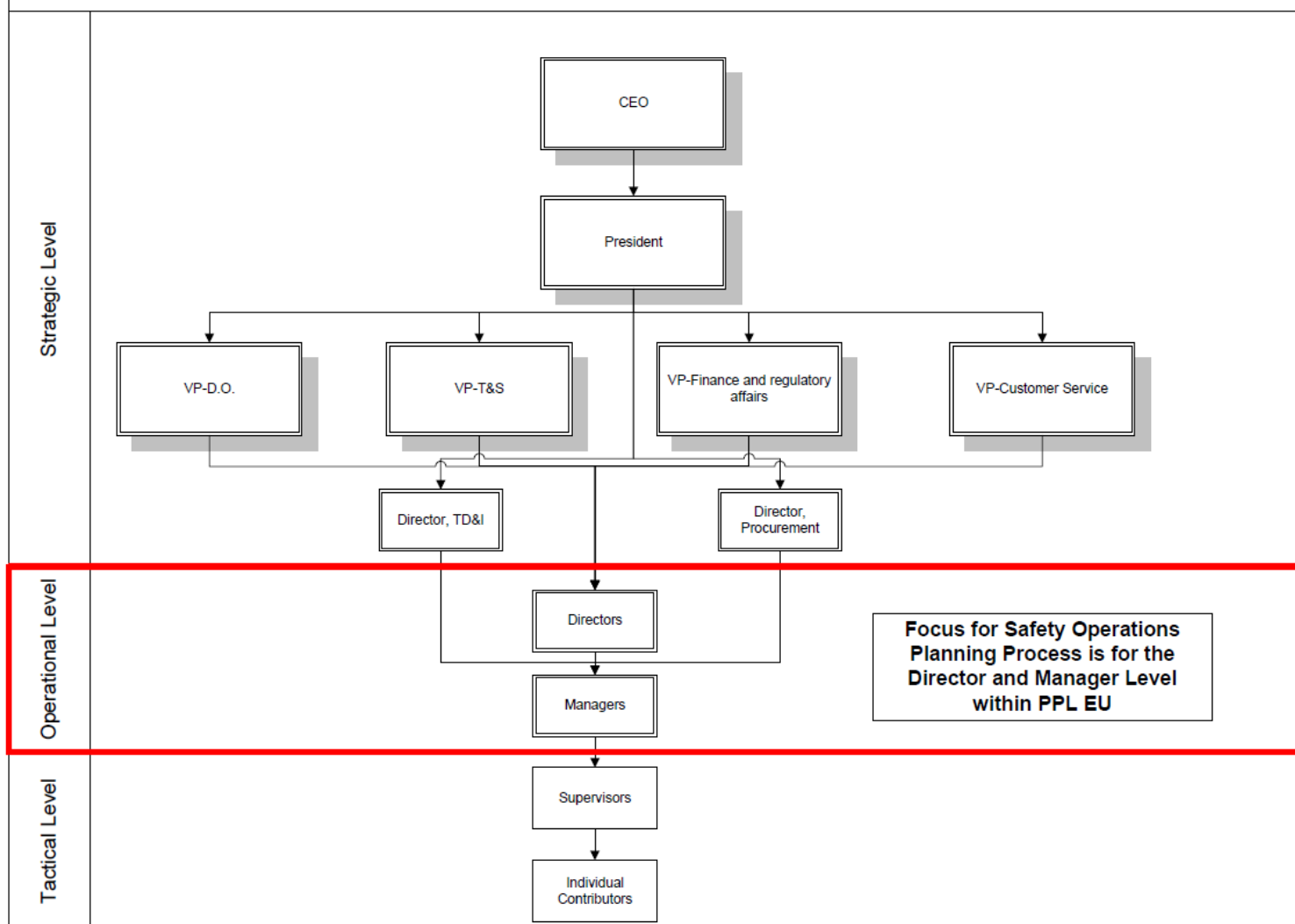


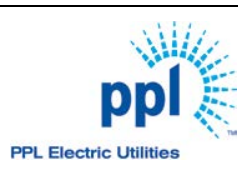
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**Attachment A**

**Safety Operations Planning Focus Area**



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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish safety requirements to be followed by PPL Electric Utilities employees performing activities where exposure to respirable crystalline silica may result at or above the 25 micrograms per cubic meter of air ACTION LEVEL (averaged over an 8-hour day).
- 1.2 Protect workers from respirable crystalline silica exposures above the permissible exposure limit of 50 micrograms of silica per cubic meter of air, averaged over an 8-hour day.

## **2.0 RESPONSIBILITY**

- 2.1 Safety Operations
  - 2.1.1 Work with business line to arrange for measuring the amount of silica that workers are exposed to -- determine if it may be at or above an ACTION LEVEL of 25 micrograms of silica per cubic meter of air averaged over an 8-hour day.
  - 2.1.2 Assure availability of approved training regarding crystalline silica exposure in accordance with this procedure and applicable safety rules.
  - 2.1.3 Provide guidance and consultation on issues involving silica exposure.
- 2.2 Supervisors
  - 2.2.1 Require employees to work within the provisions of this procedure.
  - 2.2.2 Assure that applicable employees receive training.
  - 2.2.3 Designate competent person as determined by their training and ability.
- 2.3 Competent Person
  - 2.3.1 Make frequent and regular inspections of job sites, materials and equipment to assist in implementing exposure control plans.
  - 2.3.2 Provide input when needed in evaluating upcoming projects that may be expected to result in respirable crystalline silica exposure.
- 2.4 Employee Users
  - 2.4.1 Use the recommended and best practices to reduce exposure to crystalline silica exposure in the work being performed.



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### 3.0 APPLICABILITY

- 3.1 This procedure applies to all activities where crystalline silica containing products may be used and/or crystalline silica generated and potentially create employee exposure.

### 4.0 TERMS AND DEFINITIONS

- 4.1 **Action level** means a concentration of airborne respirable crystalline silica of 25  $\mu\text{g}/\text{m}^3$ , calculated as an 8-hour TWA.
- 4.2 **Assistant Secretary** means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.
- 4.3 **Director** means the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.
- 4.4 **Competent person** means an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in section 2.3.
- 4.5 **Employee exposure** means the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.
- 4.6 **High-efficiency particulate air [HEPA] filter** means a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.
- 4.7 **Objective data** means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.
- 4.8 **Physician or other licensed health care professional [PLHCP]** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by paragraph (h) of this section.
- 4.10 **Respirable crystalline silica** means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size- selective





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samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality-Particle Size Fraction Definitions for Health-Related Sampling.

- 4.11 **Specialist** means an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

## **5.0 MAIN BODY**

### **5.1 Specified Exposure Control Methods**

- 5.1.1 For each employee engaged in a task identified on Table 1 in Attachment A, PPL Electric Utilities will fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with Section 5.2.

- 5.1.2 When implementing the control measures specified in Table 1, PPL Electric Utilities will:

5.1.2.1 For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;

5.1.2.2 For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;

5.1.2.3 For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:

- a. Is maintained as free as practicable from settled dust;
- b. Has door seals and closing mechanisms that work properly;
- c. Has gaskets and seals that are in good condition and working properly;
- d. Is under positive pressure maintained through continuous delivery of fresh air;
- e. Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0  $\mu\text{m}$  range (e.g., MERV-16 or better); and
- f. Has heating and cooling capabilities.

- 5.1.3 Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.



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- 5.2 Alternative Exposure Control Methods. For tasks not listed in Table 1, or where PPL Electric Utilities does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1: We will ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of  $50 \mu\text{g}/\text{m}^3$ , calculated as an 8-hour TWA, assessing the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.
- 5.2.1 *Exposure Assessment.* Within five working days after completing an exposure assessment, we will individually notify each affected employee in writing of the results of that assessment or post the results in an appropriate location accessible to all affected employees.
- 5.2.2 Whenever an exposure assessment indicates that employee exposure is above the PEL, we will describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.
- 5.2.3 *Engineering and work practice controls.* We will use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless we can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, we will nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection.
- 5.3 Housekeeping
- 5.3.1 It is not permitted to perform dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.
- 5.3.2 It is not permitted to allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless the compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or no alternative method is feasible.
- 5.4 Respiratory Protection. Where respiratory protection is required we will offer it in accordance with the OSHA Respirable Crystalline Silica and Respiratory Protection standards and our applicable safety procedures.
- 5.5 Written Exposure Control Plan.



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- 5.5.1 A “Written Exposure Control Plan” is needed and will be established if the exposure to silica is unknown or the type of work performed is not on Attachment A – Table 1.

If needed, we will establish and implement a written exposure control plan that contains at least the following elements:

- 5.5.1.1 A description of the tasks in the workplace that involve exposure to respirable crystalline silica;
- 5.5.1.2 A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;
- 5.5.1.3 A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
- 5.5.1.4 A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors.
- 5.5.2 PPL Electric Utilities management will review and evaluate the effectiveness of these written exposure control plans at least annually and update them as necessary.
- 5.5.3 PPL Electric Utilities management will make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director.
- 5.5.4 PPL Electric Utilities management will designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.
- 5.6 Medical Surveillance. PPL Electric Utilities management will make medical surveillance available at no cost to the employee, and at a reasonable time and place, for each employee who will be required under this section to use a respirator for 30 or more days per year. We will ensure that all medical examinations and procedures required by this section are performed by a PLHCP as defined in the OSHA Respirable Crystalline Silica standards.
- 5.7 Communication and Training. We will provide communication and training as required in the OSHA Respirable Crystalline Silica standards.



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## **6.0 REFERENCES**

- 6.1 PPL Electric Utilities Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 OSHA 29 CFR 1926.1153, 1926.1153 Appendixes A, 1926.1153 Appendix B, and 1926 Subpart Z Appendix A
- 7.2 OSHA 29 CFR 1910.1053, 1910.1053 Appendix A, 1910.153 Appendix B
- 7.3 OSHA 29 CFR 1910.134, Respiratory Protection

## **8.0 TRAINING / SAFETY**

- 8.1 Assure availability of approved training regarding crystalline silica exposure in accordance with this procedure and applicable safety rules.

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

## **10.0 ATTACHMENTS**

- 10.1 Attachment A – Table 1

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

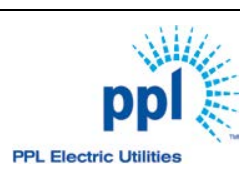


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## 12.0 RECORD OF REVISIONS

Rev	00	Date	05/17/2017	Effective	6/17/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH 1Source Safety and Health and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Dalton Shorts, and Steve Mondschein			
<b>Approved by:</b>		Brian Matweecha, Safety Manager			
<b>Revision Comments:</b>		Developed to ensure compliance with OSHA 29 CFR 1926.1153 and OSHA 1910.1053, Respirable Crystalline Silica.			

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## ATTACHMENT A TABLE 1

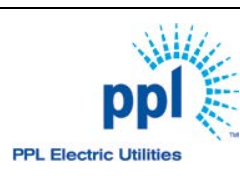
### §1926.1153 Respirable crystalline silica.

(c) Specified exposure control methods. (1) For each employee engaged in a task identified on Table 1, the employer shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with paragraph (d) of this section.

**Table 1: Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica**

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(i) Stationary masonry saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  – When used outdoors.  – When used indoors or in an enclosed area.	None  APF 10	APF 10  APF 10

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(iii) Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less)	For tasks performed outdoors only:  Use saw equipped with commercially available dust collection system.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.	None	None
(iv) Walk-behind saws	Use saw equipped with integrated water delivery system that continuously feeds water to the blade.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  – When used outdoors.  – When used indoors or in an enclosed area.	None  APF 10	None  APF 10
(v) Drivable saws	For tasks performed outdoors only:  Use saw equipped with integrated water delivery system that continuously feeds water to the blade.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None

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Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(vi) Rig-mounted core saws or drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)	Use drill equipped with commercially available shroud or cowl with dust collection system.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.  Use a HEPA-filtered vacuum when cleaning holes.	None	None
(viii) Dowel drilling rigs for concrete	For tasks performed outdoors only:  Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism.  Use a HEPA-filtered vacuum when cleaning holes.	APF 10	APF 10
(ix) Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.  OR  Operate from within an enclosed cab and use water for dust suppression on drill bit.	None	None





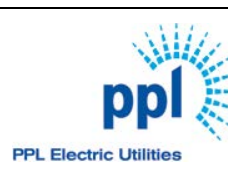
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Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(x) Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.  <ul style="list-style-type: none"> <li>When used outdoors.</li> <li>When used indoors or in an enclosed area.</li> </ul> OR Use tool equipped with commercially available shroud and dust collection system.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.	None  APF 10	APF 10  APF 10
	<ul style="list-style-type: none"> <li>When used outdoors.</li> <li>When used indoors or in an enclosed area.</li> </ul>	None  APF 10	APF 10  APF 10
(xi) Handheld grinders for mortar removal (i.e., tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	APF 10	APF 25

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(xii) Handheld grinders for uses other than mortar removal	For tasks performed outdoors only:  Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  OR Use grinder equipped with commercially available shroud and dust collection system.  Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.  Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	None	None
	<ul style="list-style-type: none"> <li>When used outdoors.</li> <li>When used indoors or in an enclosed area.</li> </ul>	None  None	None  APF 10



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Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	<p>Operate equipment from within an enclosed cab.</p> <p>When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.</p>	<p>None</p> <p>None</p>	<p>None</p> <p>None</p>
(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: demolishing, abrading, or fracturing silica-containing materials	<p>Apply water and/or dust suppressants as necessary to minimize dust emissions.</p> <p>OR</p> <p>When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.</p>	<p>None</p> <p>None</p>	<p>None</p> <p>None</p>

- (2) When implementing the control measures specified in Table 1, each employer shall:
- (i) For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
  - (ii) For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;
  - (iii) For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
    - (A) Is maintained as free as practicable from settled dust;
    - (B) Has door seals and closing mechanisms that work properly;
    - (C) Has gaskets and seals that are in good condition and working properly;
    - (D) Is under positive pressure maintained through continuous delivery of fresh air;
    - (E) Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 µm range (e.g., MERV-16 or better); and
    - (F) Has heating and cooling capabilities.
- (3) Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.



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**WALKING-WORKING SURFACES**

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## **1.0 PURPOSE/SCOPE**

- 1.1 Establish minimum requirements for assuring that all walking and working surfaces are designed, installed and maintained in a safe condition.
- 1.2 The objective of this procedure is to establish uniform specifications and requirements for evaluating, correcting and maintaining walking and working surfaces and properly communicating associated hazard information to all affected personnel to comply with PPL Electric Utilities expectations, and federal Occupational Safety and Health Administration (OSHA) regulations.
- 1.3 This procedure applies to all personnel while working in or on PPL Electric Utilities owned facilities, operated or maintained equipment, and to projects or project work conducted within PPL Electric Utilities service territory.

## **2.0 RESPONSIBILITY**

### **2.1 EMPLOYEES**

- 2.1.1 All walking and working surfaces must be properly maintained to prevent slips, trips and falls by –
  - 2.1.1.1 Maintaining awareness and protecting ourselves from potential hazards in the work environment which may be presented by changes in elevation, use of ladders, scaffolding and stairs, and wet or icy surfaces.
  - 2.1.1.2 Wear well-fitting, slip resistant safety footwear.
  - 2.1.1.3 Use handrails wherever provided and maintain three points of contact, for example when going up and down stairs.

### **2.2 SUPERVISORS**

- 2.2.1 Require employees to work within provisions of this procedure.
- 2.2.2 Responsible to provide proper tools and equipment related to walking / working surfaces.

## **3.0 APPLICABILITY**

- 3.1 This procedure applies to all employees utilizing a walking / working surface.



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#### **4.0 TERMS AND DEFINITIONS**

- 4.1 **Fixed stairs** — include interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits.
- 4.2 **Floor Hole** — An opening measuring 1 to less than 12 inches at its narrowest point in any floor, platform, pavement, or yard, through which materials but not persons may fall (for example: a belt hole, pipe opening, or slot opening).
- 4.3 **Floor Opening** — An opening measuring 12 inches or more at its narrowest point in any floor, platform, pavement, or yard through which persons may fall (for example: hatchways, stairs or ladder openings, pits, or large manholes). Floor openings used for elevators, dumb waiters, conveyors, machinery, or containers are excluded.
- 4.4 **Handrail** — A rail used to provide employees with a hand hold for support.
- 4.5 **Platform** — Walking working surface that is elevated above the surrounding area.
- 4.6 **Standard Guardrail** — A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent persons from falling.
- 4.7 **Stair Railing (hand rail)** — A vertical barrier erected along exposed sides of a stairway to prevent falls.
- 4.8 **Toe-board** — A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, ramp or scaffold to prevent materials from falling.
- 4.9 **Walking and Working Surfaces** — Any horizontal or vertical service on or through which an employee walks, works, or gains access to a work area or work place location.
- 4.10 **Walkway (Runway)** — Elevated walking working surface such as shafting or walkways between buildings.

#### **5.0 MAIN BODY**

- 5.1 Keep all work areas, passageways, storerooms clean, orderly, sanitary, and free of known hazards. All floors shall be maintained in a clean, so far as possible, dry condition. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats, or other dry standing places should be provided where practicable. To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards.



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- 5.2 Keep aisles and passageways clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked. Where mechanical handling equipment is used, allow sufficient safe clearances for aisles, at loading docks, through doorways, and whenever turns must be made.
- 5.3 Determine the safe load capacity of an elevated surface before placing a load on the surface. Load capacity markings shall be located in conspicuous places and shall not be removed or defaced.
- 5.4 Standard guardrail (with toe-boards) and covers shall be used to prevent falls into floor openings or over exposed sides.
  - 5.4.1 Standard guardrail shall have a vertical height of 42 inches from the upper surface of the railing to the floor surface and shall include a top rail, intermediate rail and post. The top rail shall be smooth surfaced throughout its length.
  - 5.4.2 A standard toe-board shall be 4 inches nominal in vertical height from its edge to the level of the floor, platform, runway, or ramp.
  - 5.4.3 Every stairway floor opening shall be guarded by a standard guardrail guarding all exposed sides.
  - 5.4.4 Ladder-way floor opening platforms shall be guarded by standard guardrail and toe-boards on all exposed sides.
  - 5.4.5 Openings shall be provided with a swinging gate or offset so a person cannot walk directly into the opening. Do not use a chain for this purpose.
  - 5.4.6 Each hatchway and chute opening shall be guarded by one of the following:
    - 5.4.6.1 Floor opening cover of standard strength and construction equipped with standard guardrail.
    - 5.4.6.2 Removable standard guardrail with toe-board on one or two sides of the opening, with fixed standard guardrail with toe-boards on all other exposed sides. (Removable guardrails shall be kept in place when the opening is not in use.)
  - 5.4.7 When a hatchway or chute is in active use (material is being fed through) fall protection shall be used to prevent a person from falling through the opening.
  - 5.4.8 Chute wall opening from which there is a drop of more than four feet shall be guarded by one of more of the following barriers: slats, grill work, or railing, as well as toe-board if necessary.
  - 5.4.9 Manhole floor openings shall be guarded by a manhole cover.



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- 5.4.10 Pit and trapdoor floor openings, infrequently used, shall be guarded by a floor opening cover. This also applies to vats, tanks and ditches. When open, they shall have an attendant or be protected on all exposed sides by standard guardrails.
- 5.4.11 Every temporary floor opening or floor hole shall be guarded by railing with toe-board on all exposed sides or have an attendant.
- 5.4.12 Where there is exposure below to dropped objects, a removable toe board or equivalent shall also be provided. When the opening is not in use the guards shall stay in place.
- 5.4.13 Every open sided floor or platform four feet or more above adjacent floor or ground level shall be guarded by a standard guardrail on all open sides except where there is an entrance. Toe-boards shall be added as necessary.

**5.5 Walkways (Runways)**

- 5.1 Every walkway shall be guarded by a railing on all open sides four feet or more above floor or ground level. Whenever materials are likely to be used on the walkway, a toe-board shall be provided on each exposed side.

**5.6 Stairways**

- 5.6.1 Every flight of stairs having four or more risers shall be equipped with stair railings or handrails and clear of all obstructions except handrails.
- 5.6.2 Stairways less than 44 inches wide shall have at least one right side descending handrail. If one side is open, the open side shall have the handrail. Wider stairways shall have two handrails.
- 5.6.3 Stair railing shall be 30 to 34 inches from the upper surface of the top rail to the surface of tread in line with the face of the riser at the forward edge of the tread.
- 5.6.4 For infrequently used stairways where traffic across the opening prevents the use of fixed standard guardrail (as when located in aisle spaces, etc.), the guard shall consist of a hinged floor opening cover of standard strength and construction and removable standard guardrails on all exposed sides (except at entrance to stairway).



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5.6.5 *Fixed stairs* (use other than fire exit purposes and construction operations) shall meet the following criteria:

- 5.6.5.1 Designed and constructed to carry a load of five times the normal live load anticipated but never less than a moving concentrated load of 1,000 pounds.
- 5.6.5.2 Minimum width of 22 inches. Riser height shall have a maximum height of 9.5 inches. Tread depth shall be a minimum of 9.5 inches.
- 5.6.5.3 Installed at angles to the horizontal of between 30 and 50 degrees [(29 CFR 1910.24 (e))].
- 5.6.5.4 Treads shall be reasonably slip-resistant and the nosing shall be of nonslip finish.
- 5.6.5.5 Welded bar grating treads without nosing are acceptable providing the leading edge can be readily identified by personnel descending the stairway *and* the tread is serrated or of definite nonslip design.
- 5.6.5.6 Rise height and tread width shall be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

5.6.6 *Spiral stairways* shall not be permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway.

5.6.7 *Winding stairways* may be installed on tanks and similar round structures where the diameter of the structure is not less than five (5) feet.

5.7 **Ladders (Refer to Safety Procedure[ [SP 35 Ladders](#)])**

5.8 **Scaffolds (Refer to Safety Procedure [SP 14 Scaffolds](#))**

## **6.0 REFERENCES**

6.1 Not Applicable

## **7.0 REGULATORY REQUIREMENTS**

7.1 OSHA 29 CFR 1910 Subpart D – Walking-Working Surfaces

## **8.0 TRAINING**

8.1 PPL EU Safety Rule Book



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**9.0 COMPLIANCE AND EXCEPTIONS – N/A**

**10.0 ATTACHMENTS - NA**

**11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by the Safety Operations in Electric Utilities.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).

**12.0 RECORD OF REVISIONS**

Rev	00	Date	01/17/2017	Effective	3/17/2017
<b>Prepared by:</b>		Colin J. Brigham CSP, CIH One Source and Deborah A. Sweinhart, EU Safety Operations			
<b>Reviewed by:</b>		Safety Operations Safety Professionals: Jared Dyer, Brian Kostik, Elizabeth McKay, Steve Mondschein, and Dalton Shorts			
<b>Approved by:</b>		Brian Matweecha, Manager-Safety Operations			
<b>Revision Comments:</b>		Develop for compliance with OSHA 29 CFR 1910 Subpart D and related changes to include walking-working surfaces same level. PPL Electric Utilities has separate procedures addressing ladders, fall protection, and scaffolds.			





**SP 65**  
**SAFETY PROCEDURE**  
**SAFETY COMPLIANCE & LEGAL ISSUE**  
**RESOLUTION**

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## **1.0 PURPOSE/SCOPE**

- 1.1 The purpose of this procedure is to establish a documented process that TDI Safety Operations is responsible for ensuring that PPL EU remains in full compliance with all safety regulations.
- 1.2 Company safety rules, as well as federal regulations were used as the basis for this procedure.

## **2.0 RESPONSIBILITY**

- 2.1 Business Line Management
  - 2.1.1 Develop and maintain sufficient knowledge of the work and associated safety rules and practices to provide guidance to their employees.
  - 2.1.2 Shall collaborate with TDI Safety Operations to address any compliance or potential legal issues with safety.
  - 2.1.3 Shall be responsible for implementation of resolutions as it applies to their work area's compliance or legal issues.
- 2.2 TDI Safety Operations
  - 2.2.1 Shall perform periodic assessments and observations to identify compliance and legal related safety issues.
  - 2.2.2 Provide safety-related subject matter expert guidance, support, and feedback to supervisors.
  - 2.2.3 Shall assist business line with identifying compliance and potential legal related safety issues.
  - 2.2.4 Shall advise business line on recommended corrective actions when necessary, to ensure ongoing compliance with safety regulations.
  - 2.2.5 Shall be responsible for the maintenance of this procedure.

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**SP 65**  
**SAFETY PROCEDURE**  
**SAFETY COMPLIANCE & LEGAL ISSUE**  
**RESOLUTION**

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### **3.0 APPLICABILITY**

- 3.1 This procedure establishes minimum requirements pertaining to the resolution of any compliance or potential legal issues related to safety.
- 3.2 This procedure is applicable to identified compliance or potential legal issues related to safety at the point in time of the observation.

### **4.0 TERMS AND DEFINITIONS – N/A**

### **5.0 MAIN BODY**

- 5.1 Assessments
  - 5.1.1 TDI Safety Operations team performs periodic assessments in all the regions.
  - 5.1.2 TDI Safety Operations team identifies compliance and potential legal issues related to safety that are observed during assessments.
    - 5.1.2.1 Assessment compliance and potential legal issues related to safety are documented on reports for respective regions and groups.
    - 5.1.2.2 Reports are given to business line management members to address any potential gaps or issues with compliance or potential legal safety related items that TDI Safety Operations team identified.
    - 5.1.2.3 TDI Safety Operations team assists the business line as subject matter experts in developing corrective actions based on the findings from observations.
    - 5.1.2.4 TDI Safety Operations monitors the business line action items to ensure compliance with safety regulations.



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## **6.0 REFERENCES**

- 6.1 The OSH Act of 1970
- 6.2 OSHA 29 CFR 1920.269
- 6.3 PPL Electric Utilities Safety Rule Book

## **7.0 REGULATORY REQUIREMENTS**

- 7.1 The OSH Act of 1970
- 7.2 OSHA 29 CFR 1920.269

## **8.0 TRAINING**

- 8.1 PPL Electric Utilities Safety Rule Book

## **9.0 COMPLIANCE AND EXCEPTIONS - N/A**

## **10.0 ATTACHMENTS – N/A**

## **11.0 RECORD RETENTION**

- 11.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.
- 11.2 This document shall be reviewed every 5 years by TDI Safety Operations.
- 11.3 The review shall be facilitated by the Records Management Coordinator (RMC).



**SP 65**  
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**RESOLUTION**

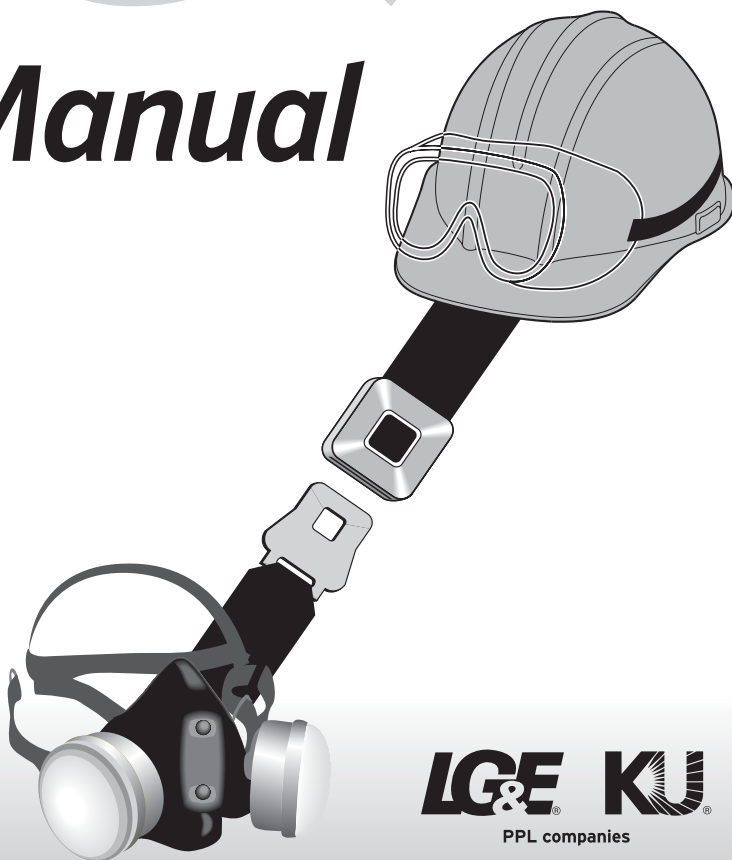
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## 12.0 REVISION HISTORY

<b>Prepared by:</b>	Safety Professional: Tyler Honor
<b>Reviewed by:</b>	TDI Safety Operations team: Jared Dyer, Brian Kostik, Dalton Shorts
<b>Approved by:</b>	Manager TDI Safety Operations: Charles Wood

<b>Revision</b>	<b>Date</b>	<b>Revision Comments</b>
00	05/31/2021	Initial Program

# Health & Safety *Manual*



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## LG&E and KU

### *Health and Safety Vision:*

*To be recognized as a world-class leader in health and safety, supported by management leadership, employee participation and mutual responsibility.*

At LG&E and KU, the health, safety and wellness of our employees, customers, contractors and business partners are our number one priority. Health and safety excellence is the core requirement of all business activities. There are “no compromises” for unsafe work practices or behaviors.

# LG&E and KU

## *Health and Safety Policy*

Health and safety are our first concerns and responsibilities. The company is committed to health and safety excellence and providing a healthful and safe work environment for all employees. Employees are responsible for their personal health and safety as well as for that of their co-workers and the general public. Accordingly, there is no job so important that health and safety policies and procedures or legal obligations are compromised.

An employee has the authority to stop any work practices he or she considers unsafe.

### **Scope**

This policy applies to all LG&E and KU and subsidiary (company) employees, temporary workers and contractors (employees) while on work time or break time, on or off company property, or after hours.

### **General requirements**

The company will ensure that its operations comply with company health and safety policies, established health and safety rules and procedures and applicable federal, state, and local regulations.

All facilities will be planned, designed, built, maintained, and operated to minimize the risk of employee injuries and property damage.

Employees shall report to their supervisor, manager or health and safety specialist instances in which a company business or employee may not be in compliance with health and safety regulations, rules, policies or procedures.

Employees shall immediately report to their supervisors hazards and unsafe work conditions in connection with their work.

Officers and senior managers will:

- ensure that health and safety are given consideration in the strategic plan;
- respect and advocate the humanitarian aspect of employees' health and safety concerns and provide prompt responses;
- provide necessary budget and human resources commitment; and
- provide appropriate emphasis on health and safety in the performance measurement system.

Managers will:

- establish health and safety goals and monitor and communicate progress;
- ensure Occupational Safety and Health Administration (OSHA) standards and requirements to maintain healthful and safe working conditions are met;

- actively encourage suggestions through health and safety committees, internal reviews and audits;
- ensure training guidelines are followed;
- promote off-the-job health and safety awareness;
- lead by example; and
- include safety engineering and planning as an integral part of the facility or equipment design and a necessary part for project or installation approval.

Supervisors will:

- ensure that employees are properly trained and policies and procedures are followed;
- lead by example;
- correct non-healthful and unsafe acts and conditions promptly;
- elicit employee participation in and encourage suggestions to improve the work environment through tailgate sessions, health and safety committees and focus groups;
- evaluate and implement suggestions for improvements when appropriate; and
- investigate all employee injuries, occupational illnesses, and property damage incidents.

Employees will:

- perform their work in accordance with established health and safety rules and procedures;
- be alert to hazards for themselves, their co-workers, and the general public;
- take an active part in company education and training programs to enhance their knowledge of healthful and safe work practices; and
- actively support and participate in company health and safety programs and initiatives.

#### **Penalties for noncompliance**

Employees who improperly or carelessly endanger themselves , other employees, the general public, or other parties will be subject to disciplinary action, up to and including discharge.

# Definitions

The following terms and definitions of terms are applicable to these safety rules.

**Aerial Device:** Any piece of equipment utilizing a bucket or platform to place the worker(s) at an elevated worksite.

**Affected Employee:** An employee whose jobs requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

**Alive or Live:** Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in place of the term "current-carrying," where the intent is clear, to avoid repetition of the longer term.

**Anchorage:** A secure means of attachment for lifelines, lanyards, and straps.

**ANSI:** American National Standard Institute.

**Approved:** The term "approved," when used in connection with methods, tools, or equipment, refers to those methods, tools or equipment approved by the company.

**Attendant:** An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.

**Authorized Person:** One who has the authority to perform specific duties under certain conditions, or who is carrying out orders from responsible authority.

**Automatic Circuit Recloser or Recloser:** A self-controlled device for automatically interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold closed, or lockout operation.

**Barrier:** A physical obstruction which is intended to prevent access to energized lines, equipment or other hazardous conditions.

**Barricade:** A physical obstruction, such as tapes, screens, or cones intended to warn and limit access to a hazardous area.

**Body Harness:** Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders, and pelvis with provisions for attaching a lanyard, lifeline, or deceleration device.

**Bond:** The electrical interconnection of conductive parts designed to maintain a common electric potential.

**Bonding Cable (bonding jumpers):** A cable connecting two conductive parts to bond the parts together.

**Cluster bar:** A terminal temporarily attached to a structure that provides a means for the attachment and bonding of grounding and bonding cables to the structure.

**Equipotential Zone:** Temporary protective grounds shall be placed at such locations and arranged in such a manner that the employer can demonstrate will prevent each employee from being exposed to hazardous differences in electric potential.

**Bus:** A conductor or a group of conductors that serve as a common connection for two or more circuits.

**Bushing:** An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

**Cable:** A conductor with insulation, or a standard conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable).

**Cable Sheath:** A conductive protective covering applied to cables.

**Catastrophic Release:** A major uncontrolled emission, fire, or explosion involving one or more highly hazardous chemicals that present serious danger to employees in the workplace.

**Circuit:** A conductor or system of conductors through which an electric current is intended to flow.

**Clearance — For Working:** Certification by the proper authority that a specified line or piece of equipment is de-energized, drained, purged, depressurized or whatever is necessary to make equipment safe to work on or in, and that the line or equipment is being turned over to the qualified person.

**Clearance — From Hazard:** Adequate separation or protection by the use of devices to prevent accidental contact by persons or objects on approach to a point of danger.

**Clearance — Hot Line:** An assurance that the automatic reclosing features of a circuit have been made inoperative.

**Clear Hot Stick Distance:** The minimum distance for the use of live-line tools held by line technician when performing live-line work.

**Company:** The employer. The entity having jurisdiction and control over the operation of the utility.

**Communication Lines:** The conductors and their supporting or containing structures that are used for public or private signal or communication services.

**Competent Person:** One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

**Conductor:** A material, usually in the form of a wire, cable, or bus bar suitable for carrying an electric current.

**Confined Space:** A place that: 1) is large enough and configured so an employee can enter bodily and perform assigned work; 2) has limited or restricted means for entry or exit (examples include: tanks, vessels, silos, storage bins, hoppers, vaults, pits and dike areas); and 3) is not designed for continuous employee occupancy.

**Covered Conductor:** A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

**Current-Carrying Part:** A conducting part intended to be connected in a electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be connected.

**De-energized:** Free from any electrical connection from a source of potential difference and from electric charge; not having a potential different from that of the earth.

**Designated Person:** See *Authorized Person*.

**Disciplinary Action:** Administrative action taken by the employer against the employee. May vary from verbal reprimand to dismissal.

**Disconnected:** Disconnected from any electrical source of supply.

**Effectively Grounded:** Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltage which may result in undue hazard to connected equipment or to persons.

**Electric Line Truck:** A truck used to transport personnel, tools, and material for electric supply line work.

**Electric Supply Equipment:** Equipment that produces, modifies, regulates, controls or safeguards a supply of electrical equipment.

**Electric Supply Lines:** Conductors used to transmit electrical energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those with less than 400 volts are considered as supply lines if so run and operated throughout.

**Emergency:** An emergency occurs when an unusual condition exist that endangers life and/or property.

**Employee:** Any person employed by the company on either the permanent or temporary payroll.

**Employer:** See *Company*.

**Enclosed:** Surrounded by a case, cage, or fence, which will protect the contained equipment and prevent a person's accidental contact with live parts.

**Enclosed Space:** A working space such as a manhole, vault, tunnel, or shaft that has a limited means of egress or entry; that is designed for periodic employee entry under normal operating conditions; and that under normal conditions does not contain a hazardous atmosphere but may contain a hazardous atmosphere under abnormal conditions.

**Energized** (also **Alive** or **Live**): Electrically connected to a source of potential difference or electrically charged so as to have a potential different from that of the earth or different from that of adjacent conductors or equipment.

**Energy Isolating Device:** A physical device that prevents the transmission or release of energy, including but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks and any other similar device with the visible indication of the position of the device (push buttons, selector switches, and other control circuit-type devices are not energy isolating devices).

**Energy Source:** Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal or other energy source that could cause injury to personnel.

**Equipment:** A general term which includes fittings, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical power transmission and distribution system, or communication systems.

**Excavations:** Any opening made in the ground, street or sidewalk in connection with company work, such as holes, trenches, ditches, and tunnels.

**Exposed:** Exposed circuits or lines are those in a position that in case of failure of supports or insulation, contact with another circuit or line may result. Exposed equipment is an object or device that can be

inadvertently touched or approached nearer than a safe distance by any person. The term is applied to objects not suitably guarded or isolated.

**Fall Arrest System** (fall from one level to another): The assemblage of equipment such as line-worker's body belt or full body harness in conjunction with a deceleration device and anchorage to limit the forces a worker experiences during a fall from one elevation to another.

**Fall Protection Program:** A program intended to protect workers from injury due to falls when working at elevations.

**Fall Prevention System** (prevents fall from one level to another): A system intended to prevent a worker from falling from one elevation to another. Such systems include positioning devices, guardrail, barriers, and restraint systems.

**Fall Protection System** (hardware): Consists of either a fall prevention system or fall arrest system.

**Fell:** The process of severing a tree from the stump so that it falls to the ground. "Feller" is the person who fells the tree.

**Flammable Liquid:** Any liquid having a flash point less than 100 degrees F. and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100 degrees F.

**Flares:** Flares, torches, fuses, red lanterns, reflectors or any other equipment that is adaptable for use as a visible warning.

**Free Fall:** The act of falling before the personal fall protection system begins to arrest the fall.

**Governmental:** Any type of political agency having control over an area. Included are federal, state, county, township, city, etc.

**Ground:** A conducting connection between an electric circuit or equipment and the earth, or to some body that serves in place of the earth.

**Grounding Cable:** A cable connected between a DE energized part and ground. Note that grounding cables carry fault current and bonding cables generally do not.

**Grounding Electrode (Ground Electrode):** A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

**Grounding Mat:** A temporarily or permanently installed metallic mat or grating that establishes an equipotential surface and provides connection points for attaching grounds.

**Grounded System:** A system of conductors in which at least one conductor or point (usually the middle wire, or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).



**Guarded:** Protected by personnel, covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects.  
(Note: Wires, which are insulated but not otherwise protected, are not considered as guarded).

**Hazard Communication Program:** Utility-developed program to ensure that information concerning hazardous chemicals (materials) is transmitted to employees through the use of warnings, procedures, material safety data sheets, and employee training.

**Hazardous Atmosphere:** An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (escape unaided from an enclosed space), injury or acute illness from one or more of the following causes: 1. Flammable gas, vapor or mist in excess of 10% of its lower flammable level (LFL); 2. Airborne combustible dust at a concentration that meets or exceeds its LFL; 3. Atmospheric oxygen concentration below 19.5% or above 23.5 %; 4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, and which could result in employee exposure in excess of its dose or PEL; or 5. Any other atmospheric condition that is immediately dangerous to life or health.

**Hazardous Material (Substances):** Any substance that is a physical hazard or health hazard. A substance is a physical hazard when there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive. The substance is a health hazard when it is considered to be a carcinogen, a toxic or highly toxic agent, a reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephrotoxic, neurotoxin, an agent that acts on the hematopoietic system, or an agent that damages the lungs, skin, eyes or mucous membrane.

**Highly Hazardous Chemical:** A substance possessing toxic, reactive, flammable, or explosive properties that are listed in OSHA standard 29 CFR 1910.119.

**High-Current Test:** Test in which fault currents, load currents and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

**High-Voltage Test:** Test in which voltages of approximately 1000 volts are used as a practical minimum and in which the voltage source has sufficient energy to cause injury.

**Hold Cards (also called Red Tags):** A card or tag-type device, usually having a predominant color of red which warns against the operation of a particular switch, device, valve, circuit, tool or machine. These tags must be respected; equipment or items so tagged must not be activated or used without full and proper authority from the responsible person.  
(Refer to *Company Lockout/Tagout Procedures*.)

**Hotline Tools and Ropes:** Those tools and ropes which are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered hot line.

**Immediately Dangerous to Life or Health (IDLH):** Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects that would interfere with an individual's ability to escape unaided from a permit space.

**Insulated:** Separated from other conducting services by a dielectric substance (including air space) permanently offering high resistance to the passage of current and to disruptive discharge through the substance or space.

**Isolated:** An object that is not readily accessible to persons unless special means of access are used.

**Job Briefing:** A short discussion of the work to be accomplished that shall cover at least the following topics: Hazards associated with the job, work procedures involved, special precautions, energy source controls and personal protective equipment requirements.

**Job Site:** The assembly point at the structure or equipment where the workers, tools, and vehicles are assembled to perform the climbing to the work site.

**Lanyard (Strap):** A flexible line used to secure a body belt or body harness to a lifeline or directly to a point of anchorage.

**Lead Person or Supervisor:** Used in a general sense to indicate any person, regardless of classification, who is directly in charge of a specific job or jobs.

**Lifeline:** A line provided for direct or indirect attachment to a worker's body belt, body harness, lanyard, or deceleration device. Such lifelines may be horizontal or vertical in application.

**Line-Clearance Tree Trimmer:** An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line clearance.

**Line-Clearance Tree Trimming:** The pruning, trimming, repairing, maintaining, removing or clearing of trees or the cutting of brush that is within 10 feet (305 cm) of electric supply lines and equipment.



**Load Dispatcher, Power Dispatcher, System Operator:** Person designated by the employer as having authority over switching and clearances of high voltage lines and station equipment.

**Manhole:** A subsurface enclosure which personnel may enter. It is used when installing, operating, and maintaining underground equipment or cable.

**Manhole Opening:** An opening through which persons may enter into a confined or restricted space.

**Material Safety Data Sheet:** A document provided by manufacturers and importers of chemicals to convey information to the users of their products. The information includes data on physical characteristics, fire and explosion hazards, reactivity, health hazards, special precautions, and fire and spill procedures.

**Minimum Approach Distance:** The closest distance an employee is permitted to approach an energized or ungrounded object.

**Near Miss:** An unintended, unplanned, and unexpected event that could have, but did not result in personnel injury or property damage.

**Occupational Safety and Health Act (OSHA) of 1970:** Requires employers to provide to employees a work place free from recognized hazards and to comply with safety and health standards established by the act. The act also charges each employee with a legal duty to comply with the act's safety and health standards. The federal act pertains to most employers but specifically excludes federal, state, and local government employees. Numerous states, however have developed safety and health standards that require compliance by all government entities.

**Pad Mount:** Equipment or device which is surface mounted and normally worked from the ground level.

**PCBs (Polychlorinated Biphenyls):** A hazardous nonconductive and noncombustible substance used in some transformers and capacitors. It has several trade names — Pyranol, Askarel, Inerteen, etc.

**Positioning Device:** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall or pole and to work with both hands free.

**Protective System:** A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

**Primary Compartment:** A compartment containing current carrying devices above 600 volts.

**Primary Voltage:** An electrical circuit that normally operates at more than 600 volts.

**Public:** Any individual not an employee or representative of the company.

**Reduced Visibility:** Times when normal visibility is reduced because of adverse weather conditions such as fog, heavy rainfall, snow, dawn or dusk.

**Road:** The paved or unpaved surface of a roadway upon which vehicles are intended to travel.

**Roadway:** The road and the areas immediately adjacent, such as the shoulder of the road or the parking strip.

**Rope Grab:** A device that attaches to a lifeline as a anchoring point to provide a means for arresting a fall.

**Safety Can:** An approved closed container of not more than five-gallon capacity having a flash-arresting screen, spring-closing lid and spout cover and designed so that it will safely relieve internal pressure when subjected to fire.

**Safety Rule:** A positive rule requiring compliance by all employees. Deviation from safety rules is not permitted and may be subject to disciplinary action.

**Secondary Compartment:** A compartment containing current-carrying devices below 600 volts.

**Secondary Voltage:** Any supply voltage less than 600 volts.

**Shall:** When the word "shall" appears in the wording of a rule, the rule is to be obeyed as written.

**Shield (Shield System):** A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shield structures can be permanent or portable and moved along as work progresses.

**Shoring (Shoring System):** A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designated to prevent cave-ins.

**Should:** When the word "should" appears in the wording of a rule, the rule is recommended but is not compulsory.

**Sloping (Sloping System):** A method of protecting employees from cave-ins by excavating to form sides of excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

**Snap-Hook:** A self-closing device with a keeper, latch, or other similar arrangement that will remain closed until manually opened. Such devices include self-closing, single-action, double-action, or double-locking snap-hooks.

**Stable Rock:** Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

**Step Bolt:** A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.

**Switch:** A device for opening and closing or changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

**System Operator:** A qualified person designated to operate the system or its parts.

**Transferring:** The act of moving from one distinct object to another.

**Transitioning:** The act of moving from one location to another on equipment or a structure while going around or over an object.

**Underground Residential Distribution (URD):** The facilities necessary to furnish underground service, generally to residential and commercial-type customers, usually through directly buried cable.

**Unsafe Conditions:** Dangerous, hazardous, defective, or unusual conditions which could cause incidents.

**Vault:** An enclosure above or below ground which personnel may enter. It is used for installing, operating, and maintaining equipment or cable.

**Vented Vault:** A vault that has provision for air changes using exhaust flue stacks and low level air intakes operating on differentials of pressure and temperature providing for air flow which precludes a hazardous atmosphere from developing.

**Voltage:** The effective (RMS) potential difference between any two conductors or between a conductor and ground. The voltage specified in this manual shall mean the maximum effective voltage to which the personnel or protective equipment may be subjected. *Low voltage* includes voltages up to 600 volts. *High voltage* shall mean voltages in excess of 600 volts.

**Voltage of an Effectively Grounded Circuit:** The voltage between any conductor and ground, unless otherwise indicated.

**Warning Signs:** For the purpose of these rules, a warning sign is any sign or similar means of alerting an employee or the public of an actual or possible hazard. Included are "Danger" signs, "Caution" signs, traffic control signs, instructional signs and informational signs.

**Work Site:** The location on the structure or equipment where, after the worker has completed climbing (horizontally and vertically), the worker is in position to perform the assigned work or task.



## **A. General Rules**

### **A.1 *Application of Safety Rules***

- A.1.1.** These safety rules are designed to provide safety protection for all company employees. Retaining the safety rules book is the responsibility of the employee throughout his/her employment.
- A.1.2** Every employee shall carefully study and comply with (not merely read) the safety rules applicable to their assigned duties. Compliance with these safety rules is mandatory and is considered a requirement for employment. Violations will be considered sufficient grounds for disciplinary action.
- A.1.3** These rules represent minimum requirements, and are intended only to cover normal work conditions. Since it is impracticable to cover all conditions and emergencies, the earnest cooperation of all employees with their supervisors is required in meeting conditions not covered in these rules.
- A.1.4** The use of intoxicating or illegal substances on the job is prohibited. Employees shall not report to work while under the influence of such substances (see the Corporate Drug and Alcohol Policy).

### **A.2 *Individual Responsibility***

- A.2.1** It is the responsibility of each employee to perform assigned duties to assure:
  - a.** Safety to himself or herself.
  - b.** Safety to fellow employees.
  - c.** Protection of the public.
  - d.** Protection of company property.
- A.2.2** If an employee is called upon to perform work that could be considered hazardous and proper protection is not provided, the matter should be brought to the attention of the supervisor before starting to work. If questions arise, interpretation rests finally with the supervisor.
- A.2.3** Practical joking or horseplay while on the job is prohibited.
- A.2.4** Employees are expected, as part of their job, to take an active part in the company's Safety Program and apply it in their everyday work.
- A.2.5** An employee who is unable to perform his or her job duties because of illness, the effects of medicines or prescription drugs, or other disabilities shall promptly report that condition to the supervisor.
- A.2.6** Exposed rings, loop or dangling earrings, necklaces, chains, bracelets, watches, or other jewelry shall not be worn by workers while climbing on or off structures or vehicles, or while performing any task where jewelry might be caught

under or snagged by a projecting item. Exposed jewelry and/or wristwatches with a metal case and watchbands are not to be worn while work is being performed on or near energized equipment or lines.

- A.2.7** When working with rotating machinery, employees are not to wear loose clothing (shirttails are to be tucked into pants), gloves or jewelry (especially bracelets and chains) that can become entangled in moving machinery.
- A.2.8** An employee who has been exposed to hazardous conditions, such as communicable diseases, infectious dog bites or radioactive poisoning, is to report those conditions to the supervisor.
- A.2.9** Before commencing any work that may be hazardous, care shall be taken to establish a safe procedure. Where more than one employee is engaged in the same job, all employees concerned shall understand the procedures to be followed (job briefings). Under no circumstances shall safety be sacrificed for speed.
- A.2.10** Employees are always expected to place themselves in a safe and secure position. The care exercised by others is not to be relied upon for one's own protection.

### **A.3 Supervisors' Responsibility for Safety**

- A.3.1** Supervisors shall be responsible for the safety of the employees working under their direction and for the safety of the general public in connection with their work. The authority and responsibility for the action necessary to prevent accidents is an integral part of the supervisors' job.
- A.3.2** A job briefing/tailgate discussion shall be held prior to starting each job. The job briefing shall include at least the following subjects:
  - a. Hazards associated with the job.
  - b. Work procedures involved.
  - c. Special precautions.
  - d. Energy source controls.
  - e. Personal Protective Equipment requirements.
- A.3.3** The supervisor will issue such instructions as may be required to safely meet local conditions for which rules are not provided in this safety manual.
- A.3.4** The supervisor shall be responsible for seeing that employees have the proper instruction, training and safety equipment for performing their required job duties.
- A.3.5** If a difference of opinion arises with regard to the meaning or applications of any of these rules, or as to the means necessary to carry them out, the decision of the employee's supervisor shall be followed.

### **A.4 Reporting Employee Injuries**

- A.4.1** Injuries, no matter how slight, shall be properly treated and reported to the person in charge as soon as it is practical to do so; they are to be reported no later than the end of the employee's work shift.
- A.4.2** When professional medical services are necessary, a health care provider designated by the company should be used whenever possible. Such injuries shall be reported to management and the appropriate safety specialist immediately.
- A.4.3** Near misses (close calls) shall be reported.

### **A.5 General Precautions — Safeguarding the Public**

- A.5.1** Before engaging in work that may endanger the public, warning signs or traffic control devices shall be placed conspicuously to approaching traffic. Where further protection is needed, suitable barricades shall be erected. Where the nature of the work and traffic requires it, an employee shall be stationed to warn traffic while the hazard exists.
- A.5.2** The public shall be kept away from locations where work activity presents hazards.
- A.5.3** Whenever openings or obstructions in the street, sidewalk, walkways or anywhere on private property are being worked on or left unattended during the day, danger signals such as warning signs and flags shall be effectively displayed. Under the same conditions at night, warning lights shall be prominently displayed and excavations shall be enclosed with suitable barriers.
- A.5.4** When working on customers' premises or public property, reasonable effort shall be made to avoid creating hazards to persons or causing unnecessary property damage. Signs, barricades, tools, equipment and excess materials shall be removed from the site when the job is completed and good housekeeping shall be maintained while work is being performed.
- A.5.5** When it is necessary to leave cable reels, poles, equipment or other obstructions on a roadway overnight, the following precautions shall be taken.
  - a. They shall not be left adjacent to fire hydrants or directly in front of entrances to areas or buildings, such as parks, playgrounds, churches, houses or schools.
  - b. They shall be locked, blocked or otherwise secured.
  - c. Adequate approved warning devices shall be placed where needed.
- A.5.6** Employees are not to permit the public to assist in the

performance of their work except in those emergencies when life is endangered.

- A.5.7** When working along streets or highways, employees shall exercise care to keep handlines, cables, other equipment or material from blowing or falling into the line of traffic.

## **A.6 Fire Prevention and Protection**

- A.6.1** Work locations, vehicles and the inside and outside of buildings shall be kept clean and orderly at all times.
- a.** Combustible materials, such as oil-soaked rags, shall be kept in approved metal containers with metal lids.
  - b.** Containers shall be emptied as soon as it is practical to do so.
- A.6.2** Grease and combustible waste are not allowed to accumulate in service pits, including elevator service pits, vehicle service pits and equipment vaults.
- A.6.3** Dumpsters and similar waste containers shall be maintained at a minimum spacing of 10 feet from combustible portions of buildings.
- A.6.4** Flammable liquids shall be properly stored in approved, marked containers.
- A.6.5** A minimum 36-inch clearance shall be maintained between heating equipment and storage of flammable or combustible materials.
- A.6.6** Inside storage shall be maintained in an orderly fashion and not closer than two feet from the ceiling.
- A.6.7** A minimum clearance of 18 inches is to be maintained between the top of storage and the bottom of sprinklers.
- A.6.8** Outside storage is limited to 20 feet in height and is to be kept in an orderly fashion.
- A.6.9** Weeds and other growth are to be controlled in or around ground structures, yards, buildings, tanks or storage areas. A regular procedure shall provide for periodic inspection and clean up of these areas.

## **A.7 Housekeeping**

- A.7.1** Good housekeeping is to be maintained in shops, yards, buildings and job sites. Supervisors are responsible for proper housekeeping in and around the work they are supervising.
- A.7.2** Walks, aisles, stairways, fire escapes, elevators and other passageways are to be kept clear of obstructions and tripping hazards.
- A.7.3** Tools and materials are not to be placed where they may cause tripping or stumbling hazards, or where they may fall and strike anyone below.

- A.7.4** Materials stored inside buildings under construction are not to be placed within six feet of hoisting or floor openings, nor within 10 feet of an exterior wall which does not extend above the top of the materials stored.
- A.7.5** All cleaning agents, chemicals and solvents are to be kept in approved, properly labeled containers.
- A.7.6** Spills of oil, paint, water, etc., are to be cleaned up promptly. Absorbent material should be used as a clean-up aid when needed. Until such time that repairs can be made and/or spills can be cleaned up, the area shall be properly guarded (see *Environmental Procedures Manual*).
- A.7.7** Nails in boards such as those removed from scaffolds, forms and packing boxes are to be removed, and the boards carefully stacked or stored if they are to be reused. If such boards are added to a scrap pile, nails should be bent over or removed.
- A.7.8** Nails that have been driven into barrels, kegs, packing boxes or crates to secure the head or lid are to be removed when the head or lid is removed.
- A.7.9** Scrap containers or scrap bins, where practical, shall be provided where needed for storage of materials such as broken glass, insulators, sheet metal scraps, aerosol spray cans, fluorescent light tubes, etc.
- A.7.10** Dirty and oily waste rags, shop towels, trash and other waste materials shall be deposited in approved containers and be disposed of as soon as practicable in accordance with proper procedures.
- A.7.11** Employees shall cooperate in keeping restrooms, drinking fountains, equipment, locker rooms, eating or vending areas and other facilities in a clean and sanitary condition.
- A.7.12** Employees shall not spit inside buildings, vehicles, elevators, equipment or other areas where another employee may be expected to work.

## **A.8 Exits and Egress**

- A.8.1** Exit and fire doors, including hardware, shall be maintained in proper working order.
- A.8.2** Manual hold-open devices shall not be used on fire/smoke separation doors.
- A.8.3** Drapes, decorations, mirrors or other material shall not obstruct access to doors used for egress.
- A.8.4** All required exits are to be kept unlocked and unobstructed during occupancy hours.
- A.8.5** Corridor walls shall provide for an effective smoke barrier during occupancy hours.



- A.8.6** Adequate lighting shall be maintained for all means of egress when a building is occupied.
- A.8.7** Emergency lighting shall be provided to illuminate primary means of egress when a building is occupied during periods of darkness (night).
- A.8.8** Exit signs shall be provided over all exits. When the building is occupied during periods of darkness, exit signs shall be illuminated.
- A.8.9** In areas where access to exits is not easily visible, directional signs shall be provided.
- A.8.10** Exit and directional signs shall be kept free of obstructions.
- A.9 *Electrical***
  - A.9.1** A minimum 36-inch clearance shall be maintained around electrical equipment.
  - A.9.2** All electric covers — including those for outlets or junction or panel boxes — shall be maintained unbroken and in place.
  - A.9.3** All wiring — both permanent wiring and temporary extension cords — shall be protected from physical damage.
  - A.9.4** Electrical equipment and motors shall be maintained free from accumulations of oil, waste, debris and other combustibles.
  - A.9.5** Extension cords or temporary flexible cords shall not be used as permanent wiring.
  - A.9.6** Defective or inadequate electric wiring shall be repaired, removed or replaced. Oversized fuses or oversized circuit breakers shall not be used. Fuse and circuit breaker boxes shall be kept closed except during maintenance or testing. Circuits shall be properly identified in breaker boxes to allow for emergency shutoff of circuit.
- A.10 *Ignition Sources and Fuels***
  - A.10.1** When pumping or filtering oil or flammable liquids from one container to another, metallic contact shall be maintained or an electrical bonding jumper shall be connected between the containers to minimize the possibility of static spark ignition.
  - A.10.2** Smoking, open flames or other possible ignition sources shall not be permitted in areas where dangerous gases might be present; for example, when working around faulted transformer oil, oil rooms, hydrogen areas, acetylene storage or similar areas. Smoking is not permitted in storerooms, battery rooms, locations where flammable liquids are stored and used or in other areas where quantities of combustible materials are kept. Absence of "No Smoking" signs shall not excuse smoking in dangerous places.  
***Note:** Smoking shall also be in accordance with the company's smoking policy.*

- A.10.3** Matches, cigars, cigarettes and pipe tobacco shall be disposed of in suitable containers or in a safe manner.
- A.10.4** Flammable liquids such as gasoline, naphtha and lacquer thinner are not to be used for cleaning purposes.
- A.10.5** Proper precautions shall be used in the presence of material in the form of dust or powder to prevent an explosion.
- A.10.6** When temporary combustion-type heating devices are used:
  - a.** Adequate fresh air shall be available. Where it is inadequate, mechanical ventilation shall be provided.
  - b.** They shall not be set directly upon wood floors or other combustible materials unless designed for that purpose.
  - c.** They shall be located at least 10 feet from the vicinity of combustible tarpaulins, canvas, plastic film coverings, etc.
  - d.** They shall be set horizontally level, unless otherwise permitted by the manufacturer's markings, and shall be securely placed to prevent overturning and the spillage of fuel.
- A.10.7** Electrical tools shall not be used where there is a hazard of combustible vapors, gases or dust, unless the tools are designed for this application.
- A.11 *Fire Equipment***
  - A.11.1** Portable fire protection equipment shall be provided and maintained.
  - A.11.2** Fire extinguishers must not be locked or hidden behind material or machines. All fire extinguishers shall be conspicuously marked and shall be located close to the fire hazard, but not so close that they would be damaged or cut off by the fire.
  - A.11.3** Fire protection equipment shall be inspected by qualified personnel at least once each month to be sure that it is in good operating condition. A written record of the inspections shall be maintained.
  - A.11.4** Fire hoses, fire extinguishers, axes, lifelines, etc., shall not be tampered with or removed from their designated locations for purposes other than firefighting or emergency operations.
  - A.11.5** Only employees trained in the proper use of fire protection equipment shall attempt its use during an emergency.
  - A.11.6** Fixed fire protection equipment shall not be taken out of service for other than maintenance or emergency conditions unless approved by proper authority.
- A.12 *Fire Suppression and Emergency Response***
  - A.12.1** When properly trained, an employee may attempt to extinguish small "incipient" fires.
  - A.12.2** Incipient fires should be handled by using the "C.A.R.E." system:
    - a.** Contain the fire by closing doors or partitions.

- b. Alert the necessary agencies and company personnel to initiate emergency procedures.
- c. Respond within the limits of your training to suppress the fire using available portable equipment.
- d. Evacuate if the fire expands beyond the incipient level or if imminent danger exists.

**A.12.3** Fires beyond the incipient stage, or fires involving the structure, can be handled only by personnel properly trained in structural fire suppression and response procedures. The company, at its discretion, may train and maintain emergency response teams of individual response personnel to handle emergency situations.

### **A.13 *Personal Protective and Lifesaving Equipment***

- A.13.1** Employees shall use the personal protective equipment, protective devices and special tools provided for their work. Before starting work, the employee shall inspect these items to be sure that they are in safe operating condition.
- A.13.2** All safety equipment provided by the company shall not be changed or modified without proper authority.
- A.13.3** All employees subjected to a hazardous work condition that could result in an eye injury shall wear suitable approved industrial eye protection while performing their job function on any company property or work site.
- A.13.4** Appropriate and approved eye protection or eye and face protection shall be worn when an employee is engaged in the following work activities.
  - a. Drilling or chipping stone, brick, concrete, paint, pipe coatings or metal.
  - b. Power grinding, buffing or wire brushing.
  - c. Welding, cutting or burning. (Approved colored lenses shall be used.)
  - d. Hand-drilling or sawing of overhead objects.
  - e. Use of powered tools such as drills, saws or sanders.
  - f. Dust or flying particles. (Compressed air used for cleaning purposes must be less than 30 p.s.i., and then effective chip guarding and personal protection must be used.)
  - g. Gunniting, pouring hot lead or hot compounds or using other hot or injurious substances.
  - h. Handling acids, caustics, chlorines, ammonia or other similar liquids or gases, except when approved complete head coverings are worn. (Chemical goggles are necessary.)
  - i. Brush chippers.
  - j. Thermite (cadweld) type welders.
  - k. Flying particles caused by other workers, if employee is within

the range of such particles. (A suitable screen around the work may be used instead.)

- l. While using powder-actuated tools.
- m. Any time there is a possibility of electrical flash.
- n. Any other danger of injury to eyes, or at the direction of a supervisor or other person in charge, or as directed by the company's policy.
- o. At a minimum, safety glasses with fixed side shields shall be worn on power plant properties, with the exception of administrative areas, break rooms, locker rooms and company vehicles.

**A13.5** Eye protection, foot protection and other protective devices shall be worn where there is a reasonable probability that injury can be prevented by such equipment.



## A.14 Eye Protection

**Table A-1 — Eye And Face Protection Selection**

Source	Assessment of hazard	Protection
<b>Impact</b> — Chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered, fastening, riveting, and sanding.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles with side protection, goggles, face shields. <sup>1,3,5,6</sup> For severe exposure, use face shield.
<b>Impact</b> — Operating stationary or portable wire brush, grinders, drill press or drilling overhead.	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Face shield worn over goggles or spectacles with side shields. <sup>3</sup>
<b>Heat</b> — Furnace operations, pouring, casting, hot dipping and welding.	Hot sparks	Face shields, goggles, spectacles with side protection. For severe exposure, use face shield. <sup>1,2,3</sup>
	Splash from molten metals	Face shields worn over goggles. <sup>12,3</sup>
	High temperature exposure	Screen face shields; reflective face shields. <sup>1,2,3</sup>
<b>Chemicals</b> — Acid and chemicals handling, degreasing and plating.	Splash	Goggles (eyecup and cover types). For severe exposure, use face shield. <sup>3,10</sup>
	Irritating mists	Special-purpose goggles.
<b>Dust</b> — Woodworking, buffing and general dusty conditions.	Nuisance dust	Goggles (eyecup and cover types). <sup>8</sup>
<b>Light and/or radiation</b> — Welding (electric arc).	Optical radiation	Welding helmets, or welding shields. Typical shades: 10-14. <sup>9,11</sup>
<b>Light and/or radiation</b> — Welding (gas).	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding, 4-8; cutting, 3-6; brazing, 3-4. <sup>3,9</sup>
<b>Light and/or radiation</b> — Welding (cutting, torch brazing, torch soldering).	Optical radiation	Spectacles or welding face shield. Typical shades: 1.5-3. <sup>3,9</sup>
<b>Glare</b>	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable. <sup>9</sup>

1) Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protection devices do not provide unlimited protection.

2) Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.

3) Face shields should only be worn over primary eye protection (spectacles or goggles).

4) As required by the standard, filter lenses are not filter lenses, unless they are marked or identified as such.

5) As required by the standard, persons whose vision requires the use of prescription lenses must wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.

6) Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.

7) Caution should be exercised in the use of metal-frame protective devices in electrical hazard areas.

8) Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.

9) Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).

10) Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.

11) Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

## A.15 Head Protection

- A.15.1** In areas designated for hard hats, approved protective headgear shall be worn. This headgear shall have the headband properly adjusted to prevent the hat from falling off. It should be worn with the bill forward for optimum protection. If necessary, a chinstrap should be used to keep the hard hat in place.
- A.15.2** Safety headgear or headband assembly shall not be defaced or altered in any manner without approval.
- A.15.3** In order that maximum protection be obtained by company employees through the use of hard hats, and to comply with the Occupational Safety and Health Act, the following compulsory safety rules shall be observed, and hard hats shall be worn:
- by all employees when in or near construction work of any kind.
  - by all employees while within the boundaries of a substation.
  - by all employees while working on or around electrical equipment.
  - by all employees while climbing or working on poles.
  - by all employees while working under or around poles or structures.
  - by all employees while working in or around cranes, derricks, aerial lifts, industrial trucks or other material handling equipment.
  - by all employees while working under or near any type of maintenance or repair work both overhead and underground work.
  - by all employees while engaged in handling explosives and blasting.
  - by all employees while engaged in supervising, inspecting or observing tree trimming or right-of-way clearing.
  - by all power plant employees at all times, except in the offices areas, control rooms, break rooms, locker rooms and company vehicles.
  - by all employees while working in storage areas where material could fall from overhead racks or storage compartments.
  - within the boundaries of a compressor station by employees at all times, except in the offices areas, control rooms, break rooms, locker rooms, parking lots and company vehicles.
- A.15.4** If in question about where a hard hat should be worn, ask the supervisor.

## A.16 Hand Protection

- A.16.1** Each employee shall wear gloves suitable for the work being performed. Rubber glove protectors shall not be used as work gloves.

## A.17 Shoes

- A.17.1** All workers except those working in an office environment shall wear shoes which meet the following standards.
- They should have leather upper or leather-type outer construction.
  - They should have a stiff, non-skid sole and raised heel.
  - Must be mid- or high-cut (six inches or above).
  - They must be secured to the foot in a snug manner (shoelace, buckle or Velcro strap) unless the footwear is a partial- or full-ankle boot.
  - Where the work environment dictates, more stringent requirements may be mandated at the discretion of the management.
- A.17.2** The following types of footwear are unacceptable:
- Tennis or other athletic shoes.
  - Canvas, cloth or thin-soled shoes.
  - Open-toe shoes or sandals.
- A.17.3** The above shoe policy applies to office personnel when they are working in or around an operating facility and/or job site.

## A.18 Hearing Conservation

Table A-2 — Permissible Noise Exposure Levels

Duration per day, hours	Sound Level dBA Slow Response
8	85.0
7	86.25
6	87.5
5	88.75
4	90.0
3.5	91.25
3	92.5
2.5	93.75
2	95.0
1	100.0
0.5	105.0
0.25 or less	110.0

Note: For further information, reference the Hearing Conservation Program.

- A.18.1** Ear protection must be worn when there is a possibility of hearing damage, which can occur during continuous exposure to sound levels that exceed those shown in Table A-2 or exposure to loud impact noise.
- A.18.2** Specific areas where the noise levels are greater than 85 dbA shall be identified. Employees shall wear proper protective devices when exposed beyond allowable levels. In situations

where the hearing protection does not reduce the noise to an acceptable level, double protection — such earplugs and ear muffs — must be worn.

- A.18.3** Proper ear protection may consist of any of the following: ear muffs, earplugs, molded ear protectors or wax-type ear plugs. Plain cotton is not acceptable. Ear protective devices shall be worn properly to provide the required protection, and kept clean to reduce the possibility of ear infection.
- A.18.4** At a minimum, hearing protection shall be worn when entering a generation unit that is operating.

## A.19 Clothing

- A.19.1** All employees shall always wear clothing that is suitable for the particular type of work which they are doing.
- A.19.2** Employees exposed to hazards or potential electrical arc/flame hazards including but not limited to (combustible dust(s), natural gas, switch gear, etc.) shall not wear garments that, when exposed to flames or electric arcs, could increase the extent of injury. Electrical ARC Flame-Resistant clothing that meets the requirements of either the National Fire Protection Association (NFPA) 70E — 2015 standard, or Section 41 of 2012 National Electrical Safety Code (NESC), or their most current revision, shall be worn when electrical arc hazards exist. Flame Resistant clothing meeting compliant with NFPA 2112 (most current edition) shall be worn when exposed to combustible dust and/or when employees are exposed to flammable or potentially flammable atmospheres.
- FR/Arc/Flame Rated clothing (National Fire Protection Association (NFPA) 70E — 2015 standard, or Section 41 of 2012 National Electrical Safety Code (NESC) or NFPA 2112) must be inspected daily to maintain proper protection. Shirttails of FR shirts must be tucked in, or worn under FR bibs. When working on or near live-line parts where the possibility of an electric arc exists, protective clothing with full-length sleeves rolled down and buttoned shall be worn in addition to an electrical safety hat. When work is performed in the vicinity of exposed energized parts of equipment, employees shall remove all exposed conductive articles such as key or watch chains, rings, body piercings, wristwatches or bands, if such articles increase the hazards associated with inadvertent contact with the energized parts.
- A.19.3** Long-sleeve shirts rolled down and buttoned shall be required when there is a hazard such as low- and high-voltage contact, burn from electric arc, stings from insects, contact with poisonous plants and exposure to chemically treated poles. If

duties of an employee require work aloft on poles, structures, aerial devices (ladders, buckets, etc.) or work near energized line or equipment (low- or high-voltage), the long sleeves rolled down and buttoned are required.

## **A.20 Working Near or Over Water**

- A.20.1** Where the danger of drowning exists, exposed employees shall wear personal flotation devices that are approved by the U.S. Coast Guard.
- A.20.2** Personal flotation devices shall be maintained in a safe condition and inspected for defects frequently enough to ensure that conditions that would render it unusable — such as dry rot, mildew, water saturation, etc. — do not exist. Defective equipment shall not be used.
- A.20.3** Ring buoys with at least 90 feet of line shall be readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet.
- A.20.4** At least one skiff shall be immediately available at locations where employees are working over, or adjacent to, water.
- A.20.5** Employees shall not be allowed to work or travel in a boat while on duty unless the boat meets the following criteria:
- a. The boat must be approved by the U.S. Coast Guard.
  - b. The boat must be suitable for, and capable of, carrying the personnel and tools/equipment needed for the job.
  - c. Weight restrictions must be strictly followed.
  - d. If used at night, the boat must be equipped with navigation lights.
  - e. The boat must be equipped with appropriate line and anchor to stabilize the boat.
  - f. The boat must be equipped with at least one paddle or oar.
  - g. The boat must be equipped with a means of manually bailing water.
- A.20.6** Employees traveling or working on a boat shall have a means of communicating with personnel on the shore, such as a cell phone or two-way radio.
- A.20.7** Employees shall cross streams or other bodies of water only if a safe means of passage is provided.

## **A.21 Fall Protection**

- A.21.1** When an employee is exposed to a fall in excess of four feet and protective measures such as catch platforms, guardrails, and safety nets are not practical, the employee shall be protected by the use of fall-arrest equipment or positioning devices such as body harnesses, lanyards, lifelines and rope grabs.

- A.21.2** Employees shall rig fall-arrest equipment so that they cannot free-fall more than six feet or contact any lower object. Anchoring points for fall-arrest equipment shall be capable of supporting at least 5,000 pounds per employee and must be located at least waist-high — and preferably overhead — in order to reduce free-fall to six feet or less and prevent contact with the lower level.
- A.21.3** Positioning devices shall be rigged such that an employee cannot free-fall more than two feet. Anchorage points shall be capable of supporting at least twice the potential impact load of an employee's fall, or 3,000 pounds — whichever is greater.
- A.21.4** Employees shall avoid the following lanyard snap-hook connections to help eliminate the possibility of accidental disengagement (rollout):
- a. Two (or more) snap-hooks connected to one D-ring, unless locking snap-hooks are used and that disconnecting any one snap-hook does not subject the user to a fall.
  - b. Two snap-hooks connected to each other.
  - c. A snap-hook connected back on its integral lanyard unless the manufacturer allows this practice..
  - d. Improper dimensions of the D-ring, rebar, or other connection to the snap-hook dimension.
- A.21.5** Snap-hooks may not be connected to loops made in webbing-type lanyards.
- A.21.6** When vertical lifelines are used, each employee shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.
- A.21.7** Horizontal lifelines shall be used only as designed.
- A.21.8** Prior to each use, the employee shall visually inspect all fall-arrest equipment and positioning devices for cuts, cracks, tears or abrasions; undue stretching; overall deterioration; mildew; operational defects; heat damage; or damage from acid or other corrosion. Equipment showing any defect shall be withdrawn from service.
- A.21.9** All fall-arrest equipment and positioning devices subjected to impacts caused by a free-fall or by testing shall be removed from service.
- A.21.10** Employees should store all fall-arrest equipment and positioning devices in a dry place that is not subjected to direct sunlight.
- A.21.11** Employees shall not use fall-arrest equipment or positioning devices until they have been properly trained in the use of such devices.
- A.21.12 Deleted**

## **A.22 Ladders and Scaffolds**

- A.22.1** All ladders and scaffolds shall be inspected frequently and regularly. Ladders with broken or missing steps, broken side rails or other defects shall be tagged and removed from service.
- A.22.2** When ascending or descending ladders, employees shall face the ladder and grip the sides or rungs with both hands.
- A.22.3** Boxes, crates, chairs, etc., shall not be used in place of a ladder.
- A.22.4** Only one employee shall work from a ladder (except hook ladders and other ladders specifically designed by the manufacturer to permit more than employee) at one time. If the work requires two employees, a second ladder shall be used.
- A.22.5** If a ladder is to be placed where the opening of a door may displace it, the door shall be locked or otherwise guarded.
- A.22.6** Metal ladders shall not be used near energized equipment or lines. (Conductive ladders may be necessary in specialized work. Conductive ladders shall be prominently marked).
- A.22.7** Ladders shall not be painted. They shall be treated only with a transparent, non-conducting material.
- A.22.8** Only approved ladders owned by the company shall be used by employees.
- A.22.9** Ladders and scaffolds shall be sufficiently strong for their intended use.
- A.22.10** Ladders shall not be used as scaffold platforms unless specifically designed for that purpose.
- A.22.11** Workload shall not exceed manufacturer's recommended loading.
- A.22.12** Straight ladders shall not be used unless equipped with non-slip bases, held in place or otherwise secured.
- A.22.13** Straight ladders shall be placed so that the distance from the foot of the ladder to the base of the wall or other support is approximately one-fourth the working length of the ladder.
- A.22.14** An employee shall not stand on either of the top two rungs/steps of a ladder.
- A.22.15** Ladders shall not be spliced together.
- A.22.16** A ladder shall never be placed against an unstable support.
- A.22.17** Ladders shall be placed on a substantial base.
- A.22.18** Portable ladders in use shall be tied, blocked or otherwise secured to prevent their being displaced.
- A.22.19** Employees shall belt-off to a ladder whenever both hands must be used for the job or a possibility of the employee falling from an elevated position exists.
- A.22.20** When transferring from a ladder to an elevated position, the ladder side rails shall extend at least 36 inches above the landing.

- A.22.21** While an employee is working on a stepladder (except a safety platform ladder) at a point 10 feet or more above ground or floor, the ladder shall be tied, blocked, secured or held in place to prevent its being displaced.
- A.22.22** Stepladders' legs shall be fully spread and locked open when the ladder is in use.
- A.22.23** Ladders shall be used only as intended by their manufacturer.
- A.22.24** Scaffolds shall be used only if erected by individuals trained in scaffold erecting and dismantling, inspected by a competent person trained in scaffold design and tagged according to company scaffold-tagging procedures.
- A.22.25** All scaffolds shall be of sufficient strength and rigidly braced to safely support four times the weight of personnel and material to which they may be subjected.
- A.22.26** Employees shall not use a scaffold from four to 10 feet in height and less than 45 inches wide unless proper guardrails are present to provide adequate protection, or fall-protection equipment is used.
- A.22.27** Employees shall not use a scaffold over 10 feet high unless there is a standard guardrail with a midrail and toeboard to provide adequate protection.
- A.22.28** All scaffold planking and platforms shall be overlapped a minimum of 12 inches and must overhang bearers a minimum of six inches unless cleated or secured from movement boards.
- A.22.29** Scaffolds shall not be moved without first removing all loose tools, materials and equipment resting on the scaffold deck.
- A.22.30** All scaffolds shall be sufficiently secured and braced.
- A.22.31** Scaffold poles, legs, posts, frames and uprights shall always bear on base plates or screw and base plates, unless casters are being used. Footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Base plates shall rest on a firm foundation such as concrete flooring. Should environmental conditions dictate, and the surface foundation is not adequately solid, mud sills shall be used with the base plates.
- A.22.32** Scaffolds shall not be altered or moved horizontally while being used or occupied except when specifically designed for such use. Moveable scaffolding shall have the casters or wheels locked to prevent movement.
- A.22.33** The width of all scaffolds, ramps and platforms shall be sufficient to prevent congestion of persons, materials or equipment — and in no case shall they be less than 18 inches wide.

- A.22.34** Synthetic or natural-fiber rope shall not be used as guardrails.
- A.22.35** An independent lifeline, body harness and a lanyard shall protect employees working on suspended scaffolds.
- A.22.36** Safe access shall be provided for all scaffolds. Structural members should not be used as a mean of access.

### **A.23 Hold Card/Red Tag and Lockout Devices**

- A.23.1** Before starting work on any circuit, machine, belting, shafting or other apparatus which is out of service, employees shall assure themselves that the apparatus is physically rendered inoperative, and a danger, hold card/red tag or lockout device is properly attached to the apparatus control.
- A.23.2** No device shall be operated while a hold card/red tag or lockout device is attached to it.
- A.23.3** A hold card/red tag or lockout device that has been placed for the protection of workers shall be removed only by authorization of the person in whose name it was placed — and then only after the work has been completed and all workers and tools are in the clear. (Follow all applicable company operating instructions pertaining to the equipment involved.)
- A.23.4** Each employee in charge of work on any equipment shall have his/her hold card/red tag or lockout device secured to the apparatus control.  
***Note:** Refer to Company Policy/Procedure for lockout/tagout procedures.*

### **A.24 Tools**

- A.24.1** Employees shall use only approved tools and equipment (whether owned by the employee or the company) which are in safe condition. The supervisor shall be notified if proper and safe tools or equipment are not available.
- A.24.2** No one may remove, disconnect or otherwise modify a safety device on any tool or equipment.
- A.24.3** All tools shall be inspected frequently and maintained in safe condition. Those which are found to be unsafe shall be removed from service, tagged “defective” and not used again until repaired.
- A.24.4** Tools shall be used for only the purposes for which they have been designed, manufactured and approved.
- A.24.5** Tools shall not be thrown from place to place or from person to person. Tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.
- A.24.6** Tools shall never be placed unsecured or on elevated places such

as ladders, stairs or balconies or anything that they might create a stumbling hazard or become dislodged and fall.

### **A.25 Hand Tools**

- A.25.1** Sharp-edged or pointed tools shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets.
- A.25.2** Tools and equipment shall not be used for unsafe practices such as substituting a knife for a screwdriver or chisel.
- A.25.3** Impact tools — such as chisels, drills, hammers and wedges — with mushroomed heads shall not be used until they have been reconditioned. Pneumatic tool bits should be used only in pneumatic tools and shall not be used as hand tools.
- A.25.4** Hammers, axes, shovels and similar tools shall not be used if the handles are loose, cracked, splintered or taped.
- A.25.5** Defective wrenches — such as open-ended and adjustable wrenches — with sprung jaws, or pipe wrenches will dull teeth, shall not be used.
- A.25.6** Shims shall not be used to make a wrench fit.
- A.25.7** Adjustable wrenches shall be kept properly adjusted while being used.
- A.25.8** Pipes or other extensions shall not be used on a wrench handle to increase the leverage unless the wrench is specifically designed for use of such extension.
- A.25.9** Metallic rulers, metal tape lines or tape lines containing wires shall not be used near energized electric conductors or equipment.
- A.25.10** Chisels, drills, punches, hammer/slugging wrenches, ground rods and pipes shall be held with suitable holders or tongs (not with hands) while being struck with a hammer by another employee.
- A.25.11** When using a screwdriver, knife or other tool, employees shall place themselves in such a position that they will avoid injury if the tool slips.
- A.25.12** The insulation on hand tools shall not be depended upon to protect users from electrical shock.

### **A.26 Electric Tools**

- A.26.1** The non-current-carrying metal parts of portable electric tools, such as drills, saws and grinders, shall be effectively grounded when connected to a power source unless:
  - a.** the tool is an approved, double-insulated type.
  - b.** the tool is connected to the power supply by means of an isolating transformer, or other isolated power supply such as a 24V DC system.



- A.26.2** The employee shall adequately secure the work — and shall not hold small work in his/her hands, but shall use a clamp, jig or vise — when using an electric drill.
- A.26.3** Employees shall not sweep away chips from electric drills with their bare hands.
- A.26.4** Eye and face protection shall be worn whenever an electric drill is in use.
- A.26.5** Employees shall be sure that the chuck key or drift has been removed from the chuck before an electric drill is started.
- A.26.6** When installing a grinding wheel, the employee shall be sure that the rated speed of the wheel exceeds the maximum speed of the spindle. The employee shall also closely inspect the wheel and give it a “ring” test by supporting it freely and tapping it lightly with a wooden object. If the wheel is not defective, it should produce a clear, metallic sound.
- A.26.7** Most defective wheels break when first started. New wheels shall be run at full operating speed for at least one minute before work is applied. Employees shall stand to one side, away from the wheel, each time the grinder is started.
- A.26.8** Employees using abrasive wheels, chipping or grinding, shall wear a face shield in addition to goggles or safety glasses.
- A.26.9** Extension-cord hand lamps shall be of the molded composition type, or other type approved for the purpose. Hand lamps shall be equipped with a handle and a substantial guard over the bulb. Metallic bulb guards shall be grounded.
- A.26.10** Extension-cord hand lamps used in an explosive-type dust or gaseous atmosphere shall be of the explosion-proof type.
- A.26.11** When a portable hand lamp is used near energized electrical equipment or circuits, special precautions shall be taken to prevent accidental electrical contact.
- A.26.12** When employees are entering confined spaces with explosion hazards (such as coal bunkers, breaker tanks, transformer tanks, etc.), the operating voltage of temporary electric lighting (not hand-held) shall not exceed 32 volts. The operating voltage of portable electric lighting (hand-held) used in such locations shall not exceed 12 volts.

## **A.27 *Pneumatic Tools and Compressed Air Usage***

- A.27.1** Compressed air and compressed-air tools shall be used with care.
- A.27.2** Pneumatic tools shall never be pointed at another person.
- A.27.3** Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.
- A.27.4** Safety clips or retainers shall be securely installed and

maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

- A.27.5** Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi — and then, only with effective chip guarding and personal-protective equipment.
- A.27.6** Compressed air shall not be used to blow dust or dirt from clothing.
- A.27.7** The manufacturer’s stated safe operating pressure for hoses, pipes, valves, filters and other fittings shall not be exceeded.
- A.27.8** The use of hoses for hoisting or lowering tools shall not be permitted.
- A.27.9** All compressed air hoses shall have a safety device at the source of supply or branch line to reduce pressure in the event of hose failure.
- A.27.10** Before making adjustments or changing air tools, unless the tool is equipped with quick-change connectors, the operator shall shut off the air at the air-supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.
- A.27.12** Pneumatic tools shall be operated only by competent persons who have been trained in their use. Training shall include proper use, potential hazards and means of protection.
- A.27.13** Conductive hose shall not be used near energized equipment.
- A.27.14** Employees shall not use any part of their bodies to locate or attempt to stop an air leak.
- A.27.15** When underground electric lines are present, appropriate class rubber gloves or rubber gloves and sleeves shall be worn while operating a jackhammer or rock drill. If the voltage is unknown, class 2 rubber gloves and sleeves shall be worn.

## **A.28 *Hydraulic Tools***

- A.28.1** Manufacturers’ safe operating pressures for hydraulic tools, hoses, valves, pipes, filters or fittings shall not be exceeded.
- A.28.2** Pressure shall be released before connections are broken, unless quick-acting, self-closing connectors are used.
- A.28.3** Employees shall not use any part of their bodies to locate or stop a hydraulic leak.
- A.28.4** All hydraulic lines longer than 35 ft. should have check valves or provide for loss of insulating value due to partial vacuum when used where they may come into contact with exposed live parts.
- A.28.5** All hoses shall be made of insulated material.
- A.28.6** Frayed or damaged hose will not be used.
- A.28.7** Fittings shall be clean and undamaged.
- A.28.8** All shutoff valves shall be operational.
- A.28.9** Only qualified and authorized persons shall repair hydraulic equipment.

## **A.29 Powder-Actuated Tools**

- A.29.1** Only those employees who have been trained in their use shall operate these tools.
- A.29.2** Explosive charges shall be carried and transported in approved containers.
- A.29.3** Operators and assistants using these tools shall be safeguarded by means of appropriate eye protection (approved safety glasses or goggles), face protection (a face shield), head protection (a hard hat) and appropriate hearing protection.
- A.29.4** Tools shall be maintained in good condition and serviced regularly by qualified persons. The material upon which these tools are to be used shall be examined before work is started to determine its suitability and to eliminate the possibility of hazard to the operator and others.
- A.29.5** Prior to using the tool, the operator shall inspect the tool to be sure that it is clean, moving parts operate freely and the barrel is free from obstructions.
- A.29.6** A defective tool shall be tagged and immediately removed from service.
- A.29.7** Powder-actuated tools shall not be used in an explosive or flammable atmosphere.
- A.29.8** Tools shall not be loaded until just prior to the intended firing.
- A.29.9** Only cartridges with an explosive charge adequate for the job and with proper penetration shall be used.
- A.29.10** Tools and cartridges shall never be left unattended.
- A.29.11** Tools shall never be pointed at any person.
- A.29.12** In case of misfiring, the operator shall hold the tool in place for 30 seconds. The employee shall then try to operate the tool a second time, and if unsuccessful, shall wait another 30 seconds. Misfired cartridges shall be disposed of properly. (Place in metal container and return to supervisor).
- A.29.13** Only powder charges, studs or fasteners specified by the manufacturer for the specific tool shall be used.

## **A.30 Guards**

- A.30.1** No guard shall be removed from any machine or piece of equipment except to perform required maintenance.
- A.30.2** Guards removed to perform maintenance shall be replaced immediately when the maintenance is completed. Machines shall not be operated while the guards are removed except for maintenance certification.
- A.30.3** Abrasive wheels shall be used only on machines provided with safety guards except under the following situations:
  - a.** wheels used for internal work while within the work being

ground;

- b.** mounted wheels, used in portable operations, that are two inches or smaller in diameter; and
- c.** types 16, 17, 18, 18R and 19 cones, plugs, and threaded-hole pot balls where the work offers protection.

## **A.31 Welding and Cutting**

- A.31.1** Welding and cutting shall be performed only by experienced and properly trained persons. Before grinding, welding or cutting is started, the area shall be inspected for potential fire or explosion hazards.
- A.31.2** When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling onto people or flammable material below.
- A.31.3** Suitable fire-extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.
- A.31.4** Matches and compressed-gas lighters shall not be carried by welders or their helpers when engaged in welding or cutting operations.
- A.31.5** A fire watch shall be maintained wherever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area one-half hour after completion of welding.
- A.31.6** Where combustible materials such as paper clippings or wood shavings are present, the floor shall be swept clean for a radius of 35 feet before welding. Combustible floors shall be kept wet or protected with fire-resistant shields. Where floors have been wet down, personnel operating arc-welding equipment shall be protected from possible shock.
- A.31.7** To protect eyes, face and body during welding and cutting, the operator shall wear an approved helmet or goggles, proper protective gloves and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding operations unless they use approved eye protection.
- A.31.8** Proper eye protection shall be worn to guard against flying particles when the helmet or goggles are raised.
- A.31.9** Machinery, tanks, equipment, shafts or pipes that could contain explosive or highly flammable materials shall be thoroughly cleaned and decontaminated prior to the application of heat.
- A.31.10** Where there is a possibility of an explosion from dusts or gases, grinding, welding or cutting equipment shall not be used until the space is adequately ventilated.
- A.31.11** Welders shall place welding cables, hoses and other equipment

so that they are clear of passageways, ladders and stairways.

- A.31.12** Where the work permits, the welder should be enclosed in an individual booth or shall be enclosed with noncombustible screens. Workers or other persons adjacent to the welding areas shall be protected from rays by shields, or shall be required to wear appropriate eye and face protection.
- A.31.13** After welding or cutting operations are completed, the welder shall mark the hot metal or provide other means of warning other workers.
- A.31.14** Potentially hazardous materials in fluxes, coatings, covering and filler metals are released to the atmosphere during welding or cutting operations. While welding or cutting, adequate ventilation or approved respiratory protection equipment shall be used. Special precautions shall be taken when using materials that contain cadmium, fluorides, mercury, chlorinated hydrocarbons, stainless steel, zinc, galvanized materials, beryllium and lead. Employees shall refer to Material Safety Data Sheets for specific requirements pertaining to the above listed hazardous materials.
- A.31.15** Employees welding or cutting in confined spaces shall conform to the requirements of confined spaces.
- A.31.16** Only approved gas welding or cutting equipment shall be used.
- A.31.17** Approved backflow check valves shall be used on gas welding rigs in both gas and oxygen lines.
- A.31.18** Welding hose shall not be repaired with tape.
- A.31.19** Matches shall not be used to light a torch; a torch shall not be lighted on hot work. A friction lighter or other approved device shall be used.
- A.31.20** Oxygen or fuel gas cylinders shall not be taken into confined spaces.
- A.31.21** For welding carts only, when welding equipment is not in use, the cylinder valves shall be closed and the pressure in the hose released. If cylinders are removed from the welding cart, the hoses and regulator must be removed and the cylinders secured and capped.
- A.31.22** Only approved electric welding equipment shall be used.
- A.31.23** The electric welding machine shall be properly grounded before use.
- A.31.24** Rules and instructions supplied by the manufacturer, or those affixed to the machine, shall be followed.
- A.31.25** Welders shall not strike an arc with an electrode whenever persons are nearby who might be affected by the arc.
- A.31.26** When electrode holders are to be left unattended, the electrodes shall be removed, and the holders shall be placed or protected so that they cannot make electrical contact with employees or

conducting objects.

- A.31.27** When the welder must leave the work or stop for any appreciable length of time, or when the welding machine is to be moved, the power supply switch to the equipment shall be opened.
- A.32     *Power Lawn Mowers, Edgers, Chain Saws, etc.***
  - A.32.1** The engine shall be allowed to cool before refueling.
  - A.32.2** Any spilled oil or fuel shall be wiped off the equipment before use.
  - A.32.3** Employees operating powered trimming equipment shall wear suitable eye protection, full-length pants and long-sleeve shirts rolled down and fastened.
  - A.32.4** For information on hearing protection while using power mowers, edgers, and chain saws, see section A.18, *Hearing Conservation*.
  - A.32.5** Employees shall insure that all applicable guards are in place prior to using power lawn mowers, and that the guards remain in place while the mower is operating.
  - A.32.6** Prior to making adjustments, inspections or repairs, the employee shall turn off the mower, permit it to come to a complete stop and remove the spark plug wire.
  - A.32.7** When operating a power mower, the operator shall:
    - a. Remove any rocks, pieces of wire or other foreign objects from the area to be mowed.
    - b. Avoid placing the body in front of the discharge opening.
    - c. Mow across the face of a slope or incline.
  - A.32.8** When starting a chain saw, it shall be placed on or against a solid support.
  - A.32.9** The operator shall grip the chain saw with both hands during the entire cutting operation.
  - A.32.10** Saw bumper shall be placed against tree or limb before starting a cut.
  - A.32.11** Chain saw operators shall, when necessary, clear the immediate area around their work to make certain that brush will not interfere with either the chain saw or operator.
  - A.32.12** All chain saws shall be equipped with "dead man" controls so that the saw cannot lock in the "on" position.
  - A.32.13** The chain saw engine or motor shall be stopped:
    - a. When working on any part of the chain or cutting bar.
    - b. While the saw is being moved from one location to another.
    - c. While unit is unattended.
  - A.32.14** A gasoline-driven chain saw shall not be used above shoulder level.
  - A.32.15** Employees shall not approach chain saw operator within the



reach of the saw while the saw is in operation.

**A.32.16** When operating a chain saw on ground level, chaps shall be worn.

**A.32.17** Powered tools shall not be left unattended while connected to a power source.

**A.32.18** Powered tools shall not be adjusted or repaired while connected to a power source.

### **A.33 Storage and Use of Compressed Gases**

**A.33.1** Cylinders shall be securely stored in an upright position in a safe and well-ventilated place prepared and reserved for that purpose.

**A.33.2** Cylinders shall not be stored near elevators, walkways, stairways nor in other places where they can be knocked over or damaged.

**A.33.3** Cylinders shall have the valve cap or valve protection device in place at all times, except when in actual use or connected to a welding set.

**A.33.4** Cylinders shall have their contents properly identified.

**A.33.5** Cylinders not having fixed hand wheels shall have keys, handles or non-adjustable wrenches on the valve stem while the cylinder is in service.

**A.33.6** Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet, or by a non-combustible barrier at least five feet high.

**A.33.7** Cylinders shall not be stored near sources of heat such as radiators or furnaces.

**A.33.8** Hydrogen and fuel-gas cylinders shall not be stored inside any operating building. Separate storage buildings or sheltered storage areas shall be used.

**A.33.9** To prevent rusting, cylinders stored outdoors should be protected from contact with the ground and against extremes of weather, such as accumulations of ice and snow in winter and continuous direct rays of the sun in summer.

**A.33.10** Empty cylinders shall be conspicuously marked "empty" or placed in an area reserved and identified for empty cylinders. The valves shall be closed and the valve protection cap replaced. Empty cylinders shall not be stored with full cylinders.

**A.33.11** Serious accidents may result from the misuse, abuse or mishandling of compressed gas cylinders. Observance of the following rules will help control the hazards in the handling of cylinders.

- a.** Cylinders shall not be dropped or allowed to strike each other violently.

- b.** When cylinders are transported by powered vehicles, they shall be secured in a vertical position (with the exceptions of grade D breathing air, nitrogen and SF<sub>6</sub> cylinders, which may be transported in the horizontal position) with valve protection caps in place.

- c.** Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed and valve protection caps put in place before cylinders are moved.

- d.** Cylinders shall not be lifted with a magnet or choker slings. They shall never be lifted by the valve or valve protection cap. When cylinders must be handled by hoisting equipment, they shall be secured on a cradle, sling board or pallet and extreme care shall be taken to prevent them from being dropped.

- e.** If the valve outlet of a cylinder becomes clogged with ice, it may be thawed with warm (not boiling) water. Flames shall not be used.

- f.** Cylinders shall not be placed where they might become part of an electrical circuit or within five feet of an electrical outlet.

- g.** A torch shall not be used in such a way that its flame is reflected from the work to the tank of the torch or that radiant heat from the work can strike the tank. This may furnish sufficient heat to develop a dangerous pressure in the tank. If there is a possibility of heat being reflected, the tank shall be protected with a suitable heat-proof shield.

**A.33.12** Compressed gases and gas cylinders shall be used and handled only by experienced or properly instructed persons.

**A.33.13** With the exception of fire extinguishers, compressed gas cylinders shall not be taken into confined spaces.

**A.33.14** Leaking, damaged or defective cylinders or accessories shall not be used. A flame shall not be used to detect gas leaks; a soap solution or other approved leak detecting solution or device shall be used. Leaking cylinders shall be moved to a safe outdoor area and the valve opened to allow the gas to escape slowly. The supervisor shall be notified.

**A.33.15** Before a regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator.

**A.33.16** Employees shall not tamper with safety relief devices in cylinder valves or regulators.

**A.33.17** Employees shall not attempt to interchange regulators, hoses or other equipment with similar equipment that has been used with other gases. They shall not force connections that do not fit properly.

**A.33.18** Smoking, welding or open flames shall be prohibited at, or in

the near vicinity of, combustible compressed gas storage or operations. Such areas shall be conspicuously posted with "No Smoking" signs.

- A.33.19** When full gas cylinders are connected to a header or manifold with other cylinders, their temperatures should be approximately the same.
- A.33.20** No attempt shall be made to mix gases in a cylinder or to transfer gas from one cylinder to another except for approved methods.
- A.33.21** Pure oxygen shall *never* be used for ventilation.
- A.33.22** Oil, grease or similar materials shall not be allowed to come in contact with any valve, fitting, regulator or gauge of oxygen cylinders.
- A.33.23** When an oxygen cylinder is in use, the valve should be opened fully to prevent leakage around the valve stem.
- A.33.24** Acetylene cylinder valves shall not be opened more than one-and-one-half turns of the spindle, and preferably no more than three-fourths of a turn.
- A.33.25** Employees shall not use acetylene in a free state at pressures higher than 15 pounds per square inch (psi).
- A.33.26** While releasing carbon dioxide from cylinders (including fire extinguishers), employees shall avoid direct contact with the gas and with system fitting or piping downstream from the gas expansion location. The expansion of this gas produces a refrigerating effect, which may freeze any exposed portion of the human body.

#### **A.34 Chemicals and Harmful Substances**

- A.34.1** A Material Safety Data Sheet (MSDS) shall be available for any chemical used or stored in the workplace.
- A.34.2** Employees required to handle or use chemicals (e.g., poisons, caustics, flammable liquids) or other harmful substances shall be instructed in the safe methods of using and handling these substances. They also should be aware of the potential hazards, personal hygiene and personal protective measures upon their initial assignment, and whenever a new hazard is introduced into the work area.
- A.34.3** Containers for storing and handling of chemicals, or flammable and combustible liquids, shall be of the approved type and clearly marked to identify their contents.
- A.34.4** Chemicals, or flammable and combustible liquids, shall not be stored in areas used for exits, stairways or in areas normally used for the safe passage of people.
- A.34.5** Adequate ventilation shall be provided or approved respiratory protective equipment shall be used when using chemicals.

- A.34.6** Some cleaning fluids may present a fire or health hazard. Only approved cleaning fluids shall be used.
- A.34.7** With the exception of consumer products, the application and purchase of pesticides and herbicides shall be performed only by employees holding a valid applicator's license or under their supervision.

#### **A.35 Painting**

- A.35.1** Employees using paints, lacquers, epoxies and other coatings or thinners should avoid inhaling the vapors, and avoid getting these materials into their mouths by washing their hands carefully before eating. Thinners shall not be used to wash painting residues from the body.
- A.35.2** Spray-painting operations shall require the use of approved respirators and eye protective equipment.
- A.35.3** Employees wearing clothing contaminated with paint or thinner shall not use or go near open flames.
- A.35.4** Spraying areas in which dangerous quantities of flammable vapors, mists, combustible residues, dusts or deposits are present shall be provided with adequate mechanical ventilation which exhausts to a safe location. This ventilation shall be kept in operation while spraying operations are being conducted, and for a sufficient time thereafter to allow vapors to be exhausted.

#### **A.36 Explosives and Blasting**

- A.36.1** Handling, storing, transporting and using of explosives shall be done in accordance with local, state and federal regulations and shall follow the latest edition of the list of *"Do's and Don'ts" Instructions and Warnings* by the Institute of Makers of Explosives.
- A.36.2** All loading and firing of explosives shall be directed and supervised by competent persons holding a "blaster's" license. Explosives and explosive materials shall not be used except with specific permission from supervisors.
- A.36.3** Only persons authorized by the company shall use explosives or explosive materials. These persons shall be appropriately licensed, qualified by training or experience in the handling and use of explosives, and shall have a working knowledge of applicable state and local laws.
- A.36.4** Because electric blasting caps — when not shielded by a closed metal box — have been detonated by the operation of two-way radios in vehicles, as well as by regular radio transmitter stations, no vehicle equipped with radio transmitter shall be allowed within 100 feet of blasting operations or exposed electric caps while the transmitter is in operation.

- A.36.5** When electric blasting caps are used, adequate signs warning against the use of mobile radio transmitters shall be prominently displayed.

### **A.37 Confined Spaces**

*Note: The following is a summary of the Confined Spaces entry procedures. The entire procedures should be referred to prior to entry.*

- A.37.1** A brief description of a confined space is "an enclosed space with limited or restricted means of entry/or exit which is not meant for continuous human occupancy." Confined spaces shall be entered only by properly trained employees. (See *Confined Space Work Procedures*.)
- A.37.2** Unauthorized personnel shall not enter a barricaded area where confined-space work is being done.

### **A.38 Warnings**

- A.38.1** Warning signs shall be heeded. Persons seen in a dangerous situation shall be warned without being startled. Employees not required to be near potentially dangerous places shall keep away from them.

### **A.39 Manual Lifting**

- A.39.1** An employee shall obtain assistance in lifting heavy objects or shall use power equipment.
- A.39.2** When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a prearranged signal for releasing the load.
- A.39.3** When two or more persons are carrying one object, each employee, if possible, shall face the direction in which the object is being carried.  
*(Avoid strains from lifting objects by being sure of footing, bending the knees and keeping the back almost perpendicular. When ready to lift, straighten the legs slowly, thus taking the strain on the stronger muscles of the body.)*
- A.39.4** Employees should avoid twisting or excessive bending when lifting or setting down loads.
- A.39.5** When moving a load horizontally, employees should push the load rather than pull it.
- A.39.6** When performing a task that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets and mechanical devices should be considered.
- A.39.7** When gripping, grasping or lifting an object such as a pipe or board, the whole hand and all the fingers should be used. Gripping, grasping and lifting with just the thumb and index finger should be avoided.

- A.39.8** Employees shall exercise caution when moving materials near energized lines or equipment.

### **A.40 Industrial Trucks**

- A.40.1** Industrial trucks shall be operated only by authorized persons who are qualified and trained in their use.
- A.40.2** Industrial trucks shall be inspected prior to use. Need for repairs shall be reported immediately.
- A.40.3** Equipment shall always be operated at a safe speed for existing conditions.
- A.40.4** Before moving the equipment, the operator shall make sure that no persons or objects are in the path of the vehicle. Clearances in all directions shall always be checked — particularly overhead clearances.
- A.40.5** Industrial trucks shall not be fueled while the engine is running.
- A.40.6** When picking up a load, forks shall be set squarely and placed under the load as far as possible. Loads should not be raised or lowered while traveling. Loaded or empty forks should be carried as low as possible, but high enough to clear uneven surfaces.
- A.40.7** The load shall not be suspended or swung over other persons. No one should be allowed to stand or walk under elevated forks.
- A.40.8** The operator shall always face in the direction of travel.
- A.40.9** Whether ascending or descending inclines, all types of loaded lift trucks shall be driven with the load on the upgrade side of the driver.
- A.40.10** Sudden stops that might spill the load shall be avoided.
- A.40.11** All loads shall be securely fastened or safely positioned to prevent tipping or falling.
- A.40.12** Movable or replaceable lift bars on forklift trucks shall be held firmly in place by a proper securing pin.
- A.40.13** Only attachments provided by or approved by the manufacturer may be used. All attachments shall be properly secured. Improvised methods shall not be used.
- A.40.14** No one other than the operator shall be allowed to ride on the truck, forklift or other equipment except when seats are provided for this purpose.
- A.40.15** When an industrial truck is left unattended (operator is 25 feet away or the vehicle is not in his view), the load-engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off and brakes set. Wheels shall be chocked when the truck is parked on an incline.
- A.40.16** Equipment with internal combustion engines shall not be operated in enclosed areas for prolonged periods of time so as not to exceed the allowable levels of carbon monoxide.

- A.40.25** When loading or unloading trucks or railroad cars, approved dock boards, properly secured, shall be used. The wheels of the truck or railroad car shall be blocked.

#### **A.41 Cranes**

- A.41.1** Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons who are qualified and trained shall operate the hoisting equipment.
- A.41.2** No person shall be permitted to ride the hook, sling or load of any hoisting equipment.
- A.41.3** Load limits, as specified by the manufacturer, shall not be exceeded under any circumstances.
- A.41.4** Operating and maintenance procedures, as specified by the manufacturer, shall be followed.
- A.41.5** The following are the minimum checks to be made daily prior to use.
- Check all control mechanisms for maladjustment that may be interfering with proper operation.
  - Check all safety devices for malfunction.
  - Look for deterioration or leakage on hydraulic systems.
  - Examine hooks, slings and load-attachment devices.
  - Make sure fire extinguisher is available.
- A.41.6** Before a lift is attempted, the lifting mechanism shall be level and firmly supported with the hoist line centered over the center of gravity of the load to be lifted.
- A.41.7** No load shall be lifted until its weight has been determined.
- A.41.8** For the first lift of each day, the load shall be test-lifted and the brakes checked (lift load several inches, and then test brakes).
- A.41.9** With every load, the slings and bindings shall be checked and shall be readjusted as necessary to insure safety and stability.
- A.41.10** All slings and other fittings shall be of sufficient strength and proper style, and shall be safe for their intended use.
- A.41.11** Signals to the equipment operator shall be given by a trained and qualified signal person designated to perform this task. The operator shall obey a stop signal given by anyone.
- A.41.12** When mobile hoists, cranes or similar lifting devices are used near energized lines or equipment, the lifting device shall be:
- properly grounded, or
  - insulated, or
  - isolated, or
  - considered as energized.
- A.41.13** No employee shall be under a suspended load or inside the angle of a winch line. No employee shall stand or work near a cable, chain or rope under tension unless the nature of the work requires it.
- A.41.14** Winch lines, ropes or wire cables shall not be guided by hand

while standing within reach of the drum or sheave.

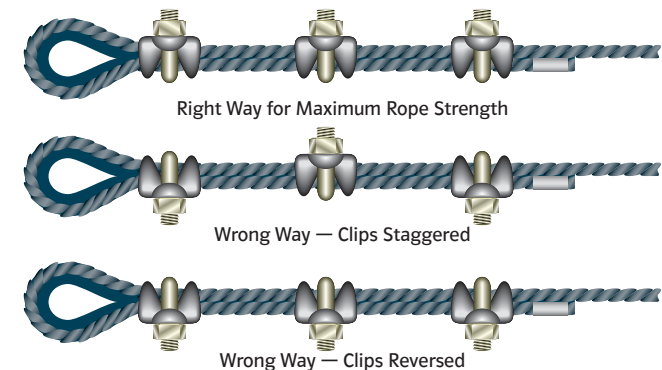
- A.41.15** Wire-rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire-rope clips shall not be used to form eyes in wire-rope bridles or slings. Knots shall not be used in wire ropes for any purpose.
- A.41.16** When U-bolt wire-rope clips are used to form eyes in winch lines, the number used and the spacing provided shall be in accordance with the illustration in Figure A-1. The U-bolt shall be applied so that the U-section is in contact with the dead end of the rope.
- A.41.17** Operators shall not leave their position at the controls of cranes, hoists, derricks or other lifting devices while the load is suspended.

**Table A-3 — Wire Rope — Safe Loads**

Size	Stranding	Improved plow		Plow	
		Breaking strength (tons)	Permissible working loads (pounds)	Breaking strength (tons)	Permissible working loads (pounds)
7/16"	6 x 19	8.27	3,308	7.19	2,876
	8 x 19	7.09	2,836	6.17	2,468
	6 x 37	7.82	3,128	6.80	2,720
1/2"	6 x 19	10.70	4,280	9.35	3,740
	8 x 19	9.23	3,692	9.02	3,208
	6 x 37	10.20	4,080	8.85	3,540
9/16"	6 x 19	13.50	5,400	11.80	4,720
	8 x 19	11.60	4,640	10.10	4,040
	6 x 37	12.90	5,160	11.20	4,480
5/8"	6 x 19	16.70	6,680	14.50	5,800
	8 x 19	14.30	5,720	12.40	4,960
	6 x 37	15.80	6,320	13.70	5,480

All permissible work loads are based on a safety factor of five.

**Figure A-1 — U-Bolt Wire-Rope Clips**



- A.41.18** Operators of cranes, derricks, hoists and other hoisting equipment shall exercise extreme caution when in close proximity to energized lines or equipment.
- When performing power transmission or distribution construction, see applicable clearance requirements.
  - When work does not involve power transmission or distribution construction and maintenance, minimum clearance distances shall be the following.

Table A-4 — Minimum Working Clearance Distances	
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

Table A-5 — Min. Working Clearance Distances While Traveling With No Load	
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 0.75	4
over 0.75 to 50	6
over 50 to 345	10
over 345 to 750	16
over 750 to 1,000	20
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

- A.41.19** Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give undivided attention to the movement.

## **A.42 Office Safety**

- A.42.1** Serious strains often result from improper handling of boxes and bundles of office supplies, ledgers, portable filing cases and office machines. Lifting should be done with the back erect by using the more powerful leg muscles.

- A.42.2** Large boxes or bundles of supplies shall be moved by hand truck or be unpacked and delivered in smaller parcels.
- A.42.3** Bulky objects shall not be carried in such a way as to obstruct the view ahead or interfere with the free use of handrails on stairways. Employees shall get help when necessary.
- A.42.4** Proper shoes shall be worn by employees to prevent slipping on floors or tripping on stairways.
- A.42.5** Water, oil or other substances spilled on floors present a dangerous slipping hazard and should be cleaned up at once.
- A.42.6** When floors are polished or waxed, care shall be taken to prevent the creation of a slipping hazard.
- A.42.7** Loose objects shall not be left on stairs or floors.
- A.42.8** Electrical, communication or other cords shall not be strung across aisles or walkways where someone may trip or fall over them.
- A.42.9** Employees shall not stand on boxes, chairs or other makeshift supports to reach objects overhead. A ladder or step-stool shall be used when needed.
- A.42.10** Doors should be opened slowly to avoid striking someone on the other side. Swinging doors, or other doors which present similar hazards, should be equipped with see-through panels within code limits.
- A.42.11** Running in aisles, in corridors or on stairways is prohibited. Hand rails should be used by employees when going up or down stairways.
- A.42.12** When walking, particularly at blind corners, employees shall keep to the right.
- A.42.13** Desk drawers, file drawers or drawer slides shall be closed when not in use and unattended.
- A.42.14** Care shall be used by employees when opening file cabinet drawers. Opening of heavily loaded upper drawers — particularly more than one at a time — may cause the cabinet to tip over. Where more than one tier of cabinets are used at one location, they should be fastened together.
- A.42.15** When using electrically operated office machines, employees shall avoid touching grounded metal objects such as radiators or water pipes. Electrically defective machines, or machines with defective cords, shall not be used.
- A.42.16** When using paper shredders, employees shall pay particular attention to keeping hands and loose pieces of clothing away from the feed area to prevent accidental shredding.
- A.42.17** Pins shall not be used to fasten papers together. Employees shall use fasteners such as paper clips, clamps or staples for this purpose.



- A.42.18** Pointed objects, such as uncapped pens, pencils, knives or scissors, should be carried by employees so as to not cause injury to themselves or others.
- A.42.19** Gummed strips of envelopes should be moistened with a suitable device, not the tongue or lips. Employees should avoid opening envelopes with their fingers and sliding their fingers along edges of paper.
- A.42.20** Razor blades shall not be used for cutting paper or sharpening pencils. Employees shall not keep razor blades or similar sharp instruments unprotected in desk drawers.
- A.42.21** Used pressurized containers (such as aerosol spray cans), fluorescent light tubes, broken glass or other sharp objects shall not be loosely discarded in wastebaskets, but shall be wrapped and identified for safe removal.
- A.42.22** Employees shall keep their fingers away from the cutting edge of paper cutters. The cutting knife on hand-operated cutters shall never be left raised and shall always be closed and secured when not in use. Machine-operated cutters shall be properly guarded to prevent inadvertent operation or contact with the cutter.
- A.42.23** Exposed edges of wooden desks, tables or other furniture shall be protected as needed to prevent injuries from splinters.
- A.42.24** All employees shall know the building's exit routes.
- A.42.25** Walks, aisles, stairways, fire escapes, elevators and other passageways shall be clear of obstructions and tripping and slipping hazards.
- A.42.26** Workstations shall be clutter-free.
- A.42.27** All employees shall know all disaster plans for the building.
- A.42.28** All employees should know the location of the "First Aid" and "Bloodborne Pathogen" kits.

#### **A.43 Video Display Terminals**

- A.43.1** Employees using video display terminals for extended periods of time should consider the following.
  - a.** Keep back straight, with feet resting firmly on the floor.
  - b.** Use a back-support cushion for lower back.
  - c.** Position video display terminal so the operator's eyes are level with the top of the screen.
  - d.** Position the video display terminal directly in front of the user, and adjusted to avoid glare.
  - e.** Adjust the height of the chair or keyboard so that shoulder-elbow-arm angle is at 90 degrees.
  - f.** Use a cushioned wrist rest to keep user's hands and fingers in the same plane as the forearm.
- A.43.2** Users of video display terminals should adjust position frequently to avoid muscle stiffness.

#### **A.44 Customer Threats and Employee Personal Security**

- A.44.1** Customer threats are a serious safety concern. They can occur in the field, at LG&E and KU facilities and by phone — particularly at call centers. Employees shall be aware of these potential threats and the actions to take to ensure their personal safety and security.
- A.44.2** No employee is immune to these threats. Some threats are aimed at the specific person interacting with the customer, while others occur because of dissatisfaction with the company.
- A.44.3** Traditionally, customer threats have been motivated by an interruption in service or a disconnection. However, these types of situations are not all-inclusive and any perceived wrongdoing by the company can serve as motivation to threaten an employee.
- A.44.4** Human behavior is unpredictable; therefore, employees must be prepared to deal with potentially threatening individuals.
- A.44.5** Employee responsibility regarding customer threats and personal security
  - a.** As with safety, planning ahead and situational awareness will help ensure an employee's security and safety by addressing routine actions that may leave an individual vulnerable. To that end, employees shall follow these guidelines.
  - b.** Employees shall practice effective situational awareness planning, when representing or performing work for LG&E and KU to minimize risks associated with customer threats or violence. The employee shall be familiar with the environment in which he or she works, and know normal behaviors, sights, sounds and activity within the scope of the work area. The employee shall be alert to abnormal conditions or circumstances that could cause a customer's emotion to escalate to a threatening or violent situation. The employee shall know in advance all entrances, exits and possible barriers to escape. These procedures are particularly important when interacting with strangers on the street. By understanding what is perceived to be normal, an employee can easily identify warning signs that may trigger the employment of de-escalation skills or the ability to safely exit the scene completely.
  - c.** De-escalation skills, which are verbal and non-verbal communication skills, can be used to calm an aggressive or potentially threatening, abusive or violent individual. Some verbal de-escalation skills are voice tone and volume. Non-verbal communication skills can aid in the de-escalation process if it matches the employee's verbal communication. Reacting in a calm demeanor will potentially send a message to the threatening customer that the employee is listening

to the perceived grievance. Also, head nodding indicates an understanding of or empathy with the customer's situation. De-escalation skills shall be used in a quick attempt to calm an individual exhibiting a threatening demeanor and provide time to reassess the situation. An employee shall only proceed with job duties if the situation feels safe. If de-escalation tactics do not work, the employee shall quickly move to a safe place away from the threatening situation and contact his or her supervisor or law enforcement.

- d. Report every case of threatening, abusive or violent behavior to a supervisor and law enforcement when appropriate. Contact Corporate Security to complete the proper internal paperwork as well.

## **A.45 Excavation Safety**

- A.45.1** Excavation hazards include exposure to cave-ins, natural gas ignition, high voltage electric utility lines, storm and sanitary sewer effluent. Ensuring the safety of the excavation prior to entry is critical. A trained Excavation Competent person (OSHA 1926.650) must evaluate every excavation regardless of the excavation's depth.
- A.45.2** PPE includes — but is not limited to — hard hat, safety glasses, gloves and steel-toed safety boots. Environment, or company policy, may require additional PPE such as traffic vests, full flame-resistant clothing and/or respirators.
- A.45.3** Monitor the excavation for combustible gas at 2 feet above the excavation floor. Hard Hats must be worn at all times in an excavation — the only exception is for welders who are making welds.
- A.45.4** Locate all foreign utilities using Kentucky 811. Allow sufficient time for utility locating companies to locate their facilities. If facilities have not been located within allotted window, make a second request.
- A.45.5** Outside of the Louisville Metro Area, calls to individual utilities may have to be made to nonmember utilities. A list may be found on the Kentucky 811 website.
- A.45.6** If excavating on private property, or within an LG&E easement, private utility locates may be required.
- A.45.7** Spot utilities as applicable. Hand- or vacuum-excavate 18 inches to each side of the marks. While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard employees.
- A.45.8** Spoils and all surcharge loads (equipment, vehicles, etc.) must be kept at least 2 feet away from the edge of the excavation.

- A.45.9** Any excavation over 20 feet in depth, or where normal shoring or sloping would not be feasible, must be designed by a registered professional engineer.
- A.45.10** Prior to entry of excavation by **any** personnel:
  - a. A competent person must visually and physically examine the excavation site regardless of the depth of the excavation.
  - b. The competent person shall determine the soil classification A, B, C (or stable rock) by manually testing the soil, the sloping/ benching or protective system required, based on the soil classification and visual observation of the excavation site, and have the authority to take prompt corrective measures to eliminate the hazards.
  - c. Examination of the excavation is required daily by a competent person, at the start of the shift, and as necessary to verify safety of the excavation throughout the day.
  - d. The competent person shall monitor and account for surcharge loads.
  - e. Each person entering an excavation shall, prior to entry, determine who the competent person onsite is and shall verbally confirm with the competent person that the excavation is safe to enter.
  - f. Any excavation over 5 feet in depth must be sloped, benched, or shored (shielded), regardless of the soil classification.
  - g. Every excavation over 4 feet in depth must have a means of access and egress which could be steps, ramps or a ladder. If a ladder is used, it must be secured (prevent movement; tie-off the ladder) and must be located to require no more than 25 feet of travel laterally within the excavation to reach the ladder. It must extend 3 feet above the top of the excavation.
  - h. Shoring or shield systems must extend 18 inches above the adjacent grade (or sloped excavation).
- A.45.11** Excavations must be made safe at the end of every shift (cease of work). This shall include the use of positive barriers such as fencing, plates, linked traffic barricades, etc.
- A.45.12** Every individual on the job site should be able to identify the competent person. The competent person must be able to answer the following questions.
  - a. What type of soil?
  - b. How soil type was determined?
  - c. Is it safe to go in?





## **B. Power Generation**

### **B.1 General**

- B.1.1** Visitors or uninstructed workers shall be accompanied by a qualified employee in stations and around utility properties.
- B.1.2** All employees entering an attended station — except employees working their shift at such station — shall immediately report their presence and purpose according to plant procedure.
- B.1.3** No switch, breaker, disconnect or other device used to put a circuit or equipment into service in a station shall be operated while a station hold card/red tag or similar device is attached to it.
- B.1.4** Before beginning work on valves, flanges or other apparatus associated with boilers, pressure vessels or pressure piping, the pressure must be relieved and the system hold-carded/red-tagged according to established procedure. Special care shall be used when loosening bolts, nuts or other fasteners until it is certain that pressure does not exist. When pressure cannot be relieved prior to beginning work, consult plant management.
- B.1.5** Wiping rags shall not be used close to moving parts where they might be caught and cause a personal injury. Extreme caution must be observed to prevent loose clothing — particularly shirt sleeves, gloves and trouser cuffs — from being caught in moving machinery.
- B.1.6** When insulation has been removed from hot piping, it shall be protected by barricading or the use of signs.
- B.1.7** The number of available personnel who are trained in CPR and first aid shall be sufficient to ensure that each employee exposed to electric shock can be reached in four minutes by a trained person. Where the existing number of employees is not sufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.
- B.1.8** All employees shall stay clear of pressurized oil, steam or air escaping from leaking lines or fittings. No attempt shall be made by an employee to stop or slow such a leak by using hands, feet or other parts of the body. The equipment shall be stopped as soon as practical.
- B.1.9** Inlet and outlet circulating water valves shall be hold-carded/red-tagged and, as an option, locked out before employees enter the water box of a condenser. If these valves are electrically operated, their main breakers shall be opened, hold-carded/red-tagged and, as an option, locked out. Follow established confined-space procedures.
- B.1.10** No one shall be at the opposite end of tubes being cleaned or

plugged. If absolutely necessary, however, shielding shall be installed at tube ends.

**B.1.11** During work on or above open grating, a suitable covering shall be used to cover the grating in order to prevent tools or parts from dropping to a lower level.

**B.1.12** A barrier such as a handrail or an attendant shall provide protection for the work area when gratings are removed.

## **B.2 Boilers**

**B.2.1** Employees shall not work on gauge glasses until pressure has been relieved. Gauge glasses shall be pressurized carefully according to manufacturer's recommendation or written plant procedure.

**B.2.2** Adequate ventilation shall exist when welding or burning is being performed inside a boiler drum or similar vessel. Follow established confined-space and welding-and-cutting procedures. Oxygen shall never be used for ventilation because of the danger of fire or explosion.

**B.2.3** On all water-tube boilers where drums are equipped with manheads at each end, both manheads shall be removed from each drum before workers enter the boiler drum. For inspection purposes, only one manhead need be removed if a worker is stationed outside during period of inspection. Follow established confined-space procedures.

**B.2.4** Boilers should be satisfactorily cleaned or de-slagged when out of service for furnace or ash-hopper work. Protection against falling materials or tools may be required, such as erecting a temporary roof over the ash pit or hopper.

**B.2.5** When the blowdown line of a boiler being worked on is connected to a common blowdown line with other boilers and it becomes necessary to open the blowdown valves of the boiler being worked on, a hold card/red tag shall be attached to the blowdown valves from all boilers. These hold cards/red tags shall not be removed until the valves of the boiler being worked on have been reclosed. Follow established hold card/red tag procedure.

**B.2.6** Employees shall not work on safety valves while a boiler is under pressure. An exception would be to make necessary adjustments performed only by personnel who are fully trained to do so, and with plant management's authorization.

**B.2.7** Leaky manheads, handhole plates and bolted flanges on steam lines shall not be worked on under pressure without specific approval from plant management.

**B.2.8** When lancing boilers, employees shall wear a long-sleeved shirt

buttoned at the collar (or slugging jacket), gloves and a face shield — in addition to the standard uniform and required safety equipment.

**B.2.9** Before opening an inspection port or door on a boiler:

- a. Notify control room operator. If necessary, the ID and FD fans should be placed on "hand" control to lessen the danger of positive pressure within the boiler.
- b. Ensure that the control room operator will not be operating a soot blower near the port.
- c. Ensure the aspirating air is valved into the header (positive-pressure boilers only).
- d. Use appropriate eye and face protection (face shield over safety glasses or goggles).
- e. Use work gloves or take other measures to avoid burns while opening the port.
- f. Do not stand in front of the port while it is being opened.

**B.2.10** While working or pounding on hoppers to aid the removal of fly ash or siftings, employees shall wear dustproof goggles, gloves and long-sleeved shirt buttoned at the collar. Respiratory protection may also be necessary.

**B.2.11** Use caution when inspection plugs are removed from hoppers. To avoid injury, dustproof goggles, gloves and dust respirator shall be worn.

**B.2.12** Use caution when opening ash-pit doors and gates. To avoid injury due to hot ash, water or boiler gas:

- a. Wear chemical goggles and a face shield, long sleeved shirt and gloves.
- b. Open ash pit/ash hopper gates/doors according to plant or manufacturer's guidelines.
- c. Position yourself in such a way to avoid being hit by the rod should a large clinker strike the rod causing the outer end to rise.

## **B.3 Hydrostatic Testing**

**B.3.1** During hydrostatic testing:

- a. **Do not** enter a boiler while pressure is being applied.
- b. **Do not** grind, cut, or weld on pressurized boiler parts.
- c. When pressure is reached, only designated inspectors are to enter the boiler.
- d. Safety-valve gags will only be applied as directed by the plant management.

## **B.4 Chemical Cleaning**

**B.4.1** Do not create, nor permit, a fire ignition source within approximately 25 feet of boiler vents or drum vents or near

chemical mixing stations. (Examples: lit smoking materials, matches, open flames and carbon-brush, motor-driven tools, which create sparks.)

- B.4.2** Become familiar with the locations of chemical cleaning operations.
- B.4.3** Exercise caution to avoid tripping over condensate, steam and chemical lines placed in paths of travel.
- B.4.4** Be alert to the possibility of leaks in supply piping or boiler chemicals. Exercise caution to avoid physical contact with identified chemical leaks.
- B.4.5** Do not work inside a boiler while chemical cleaning is in progress.
- B.4.6** Areas where chemical cleaning is in progress shall be barricaded to restrict access during cleaning.
- B.4.7** The number of personnel in the restricted area shall be limited to those necessary to accomplish the task safely.
- B.4.8** Employees in restricted areas shall wear — as a minimum — protective clothing, boots, goggles, and gloves.
- B.4.9** If flammable liquids, gases, vapors or combustible materials will be used or produced, the following shall apply.
  - a.** The area shall be posted with signs restricting entry and warning of the hazards of fire and explosions.
  - b.** Smoking, welding and other possible ignition sources are prohibited in these restricted areas.

## **B.5 Deleted**

## **B.6 Hydrogen Cooling Systems**

- B.6.1** Open flames shall be kept away from hydrogen cylinders, and employees shall not smoke in the vicinity of cylinders or the manifolds to which they are connected. No smoking will be allowed in the immediate vicinity of the hydrogen seal oil unit or hydrogen dryers.
- B.6.2** Purge hydrogen from the generator and remove the spool piece from the hydrogen supply line, blank the hydrogen supply line, and hold-card/red-tag the hydrogen system:
  - a.** Before performing any welding on the cooling system or any other generator component where hydrogen may be present.
  - b.** Before opening the water side of a hydrogen cooler for cleaning.
  - c.** Before an access door or coverplate is removed from the generator.
  - d.** A sufficient quantity of carbon dioxide shall be available at all times to purge the hydrogen from the generator.
  - e.** Never mix hydrogen and air in a generator; always:

- 1. Purge hydrogen from the generator with carbon dioxide, then purge the carbon dioxide with air.
- 2. Purge air from the generator with carbon dioxide, then purge the carbon dioxide with hydrogen.
- f.** Only non-sparking tools shall be used on hydrogen systems.

## **B.7 Chemicals**

- B.7.1** Employees required to handle or use chemicals, caustics, acids, flammable liquids or other harmful substances shall be instructed in the methods of their safe handling and use, and be made aware of the potential hazards and personal hygiene and personal protective measures required. Material Safety Data Sheets shall be on file at the plant before receiving or working with any hazardous materials.
- B.7.2** Employees must be familiar with and follow the guidelines supplied in the Material Safety Data Sheets when using a chemical.
- B.7.3** Labels on chemical containers must be maintained in a readable condition.
- B.7.4** Open flames and smoking are prohibited within 25 feet of acid in metal containers such as tanks, condensers or boilers, except in compliance with established hot-work procedure. Spark-proof tools shall always be used where there is the danger of accumulated hydrogen.

***Note:** Certain acids in contact with metal produce explosive hydrogen.*

## **B.8 Chemical Storage**

- B.8.1** Acids — in any quantity — shall be kept in an approved carboy or other container, prominently labeled. These containers shall not be used for any other purpose.
- B.8.2** Appropriate identification/warning signs must be maintained at acid-and caustic-storage areas.
- B.8.3** Acids shall not be stored near heaters, steam pipes or other sources of heat.
- B.8.4** Acids kept on shelves shall not be stored higher than waist level.
- B.8.5** If acids or caustics are spilled, they shall be flushed away with an ample supply of water and never wiped up.
- B.8.6** Employees handling acids, caustics or other corrosive, toxic chemicals shall wear approved gloves, aprons and eye and face protection, and shall take precautions to prevent personal injury.
- B.8.7** The use and toxic quality of new materials shall be investigated thoroughly, and personnel shall be advised of any hazards involved.
- B.8.8** Chemical pumps shall be washed externally before re-packing or performing maintenance work.

- B.8.9** Areas where acid cleaning is to be done shall be barricaded by suitable means, and no smoking or open flames permitted.
- B.8.10** Suitable procedures shall be established to avoid explosions from released hydrogen or injuries from the chemicals.
- B.8.11** Contact lenses shall not be worn by anyone working in a laboratory or handling acids, caustics or other corrosive chemicals.

## **B.9 Handling Chemicals**

- B.9.1** Only qualified employees or suppliers' personnel shall operate valves or other equipment that control the movement of chemicals.
- B.9.2** Approved protective equipment and clothing shall be worn whenever acids or caustics in harmful quantities may spill, splash, fly or drip upon the person handling them. The quantity of acid or caustic handled shall determine the kind and quantity of clothing and equipment. Minimum protection shall be chemical goggles, acid-proof gloves and apron.
- B.9.3** Safety shower/eye-wash units must be located in the immediate vicinity of any acid or caustic unloading, transfer or pumping station, and they must be tested before acid or caustic transfer begins.
- B.9.4** After handling large quantities of caustics, employees shall take a shower to avoid skin irritation.
- B.9.5** Before lifting or moving a carboy or any other acid container, it shall be examined carefully to see that it is not in a leaky or defective condition. The wire holding the carboy stopper in place shall be checked to see that it has not corroded, and that the stopper is secure. All movements shall be made slowly to avoid excessive agitation of the acid.
- B.9.6** Before starting to unload acid or caustic from a tank car or tank truck, check the indication or manually gauge the storage tank to ensure that it will not overflow.
- B.9.7** When tank cars or trucks are unloaded, warning signs shall be prominently posted and barriers placed so as to warn all personnel of the potential danger.
- B.9.8** Only approved methods, tools and equipment shall be used to extract acids and caustics from a container.
- B.9.9** Acid in railroad tank cars or tank trucks shall be unloaded in accordance with the regulation of the Interstate Commerce Commission.

## **B.10 Chlorine**

- B.10.1** Only employees who have been properly trained shall operate and work on chlorine lines or equipment.

- B.10.2** Move chlorine cylinders with care. Use the special lifting devices designed for one-ton cylinder handling. A well-balanced hand truck equipped with a clamp or chain should be used to move upright cylinders. Keep valve protection caps and hoods in place when moving cylinders. Cylinders should not be dropped or struck with force.
- B.10.3** One-ton cylinders should be stored on cradles that act as chocks to prevent shifting and rolling.
- B.10.4** Never store cylinders where they could be struck by falling objects or mobile equipment.
- B.10.5** When storing cylinders outdoors, avoid placing them near elevators or ventilating systems, and provide a roof or shield covers for protection against the weather.
- B.10.6** If cylinders are stored indoors, the building should comply with the recommendations of the Chlorine Institute.
- B.10.7** Always make sure the ventilation systems are operating before working in an indoor chlorine storage area.
- B.10.8** Report defective ventilation and chlorine detection system immediately.
- B.10.9** Never alter, modify or attempt to repair a chlorine cylinder.
- B.10.10** Never try to use regular pipe-threaded devices on a chlorine cylinder valve. Use equipment approved by the Chlorine Institute.
- B.10.11** Never use water on a chlorine leak. The corrosive action of chlorine and water will make the leak worse.
- B.10.12** If chlorine contacts the eyes, immediately flush with copious quantities of running water for at least 15 minutes. Then, see a physician.
- B.10.13** In the event a chlorine cylinder leaks, only properly trained employees with the necessary personal protective equipment shall attempt to stop the leak. If the leak cannot be stopped, the cylinder shall be moved to the open air and placed a safe distance from all personnel. Leaky cylinders shall be turned so that the leak is on top.
- B.10.14** A chlorine-system enclosure or shelter shall have available two units of approved, self-contained breathing apparatus and protective clothing. They shall be located outside the shelter or enclosure at a sufficient distance to make them approachable in the event of a chlorine leak.
- B.10.15** Chlorine-system enclosures shall be posted with signs restricting entry and warning of hazards to health and the hazards of fire and explosion.
- B.10.16** Emergency repair kits shall be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment or containers.

- B.10.17** Before repair procedures are started, chlorine tanks, pipes and equipment shall be purged with dry air and isolated from other sources of chlorine when possible.

## **B.11 Coal Handling**

- B.11.1** Use extreme caution when working near conveyor belts and rollers, when near rotating or reciprocating machinery and around heavy mobile coal handling equipment.
- B.11.2** Use extreme caution when maintaining rotating or reciprocating machinery. Examples:
- a.** Making alignment adjustments to an operating conveyor or drag chain.
  - b.** Lubricating and operating conveyor, crusher or drag chain.
  - c.** Clearing blocked/plugged chutes when the system is operating.
  - d.** Following the established hold card/red tag procedure when clearing blocked/plugged chutes, which cause the worker to be in a hazardous position (examples: standing on conveyor belts; entering chutes, surge bins and hoppers).
- B.11.3** Ensure that nuclear devices are disabled before entering a bunker, silo or chute.
- B.11.4** Follow established confined-space procedure before entering a bunker, silo or chute.
- B.11.5** Coal dust shall not be cleaned up in a manner that will create a hazardous, dusty atmosphere. Use of compressed air is especially prohibited.
- B.11.6** Follow established rules when breakers must be opened or closed.
- B.11.7** Be aware of eye and respiratory hazards when coal is dry and dusty. Use proper personal protective equipment.
- B.11.8** Before cutting/welding in coal-handling areas, follow established hot-work procedures. Do not smoke in coal-handling areas.

## **B.12 Conveyors and Crushers**

- B.12.1** Operate conveyors, crushers and stacker/reclaimers according to established procedures.
- B.12.2** Employees shall stay clear of conveyors, which may start at any time.
- B.12.3** Employees shall not ride conveyor belts or buckets.
- B.12.4** Employees shall not attempt to clear a blocked conveyor or crusher, or loosen any material therein (except from established positions outside the equipment) without first shutting off the power and following established hold card/red tag procedures.
- B.12.5** Employees shall not clean around conveyor rollers while belt is in operation.

- B.12.6** Belt conveyors shall be equipped with emergency stop cords for their entire exposed lengths.
- B.12.7** Repairs shall not be made to conveyors or crushers except when the electrical system is isolated and hold-carded/red-tagged. Never rely on the emergency trip cord for personal protection.
- B.12.8** Employees shall cross over or under conveyors only where permanent walkways with railings have been installed.

## **B.13 Coal Storage**

- B.13.1** When it is necessary to enter a coal bunker or silo, the isolation gate must be closed and hold-carded/red-tagged, or the associated mill feeder must be shut down and hold-carded/red-tagged. Follow established confined-space procedures.
- B.13.2** Should a bunker or silo have to be entered for the purpose of dislodging coal, or for inspection, the entrant must wear an approved harness with the proper fall protection attached to an approved anchor point. An approved rescue device must also be attached to the harness. The entrant must never go below lodged coal and must use non-sparking tools.
- B.13.3** Rescue equipment — consisting of self-contained breathing apparatus, air-pac mask and either a mechanical or power hoisting device — shall be available and ready for use for quick removal of a stricken or injured employee. Follow established confined-space procedures.
- B.13.4** Employee shall not smoke in coal-storage buildings or buildings housing coal-crushing and -handling equipment, including the thaw sheds.
- B.13.5** Only portable lights and extension cord lights meeting dust-proof requirements shall be used in coal-storage buildings or buildings housing coal-crushing and -handling equipment. Portable electrical tools and appliances shall not be operated in these areas unless special precautions are taken to eliminate explosion hazards.
- B.13.6** When welding or use of open flame is required in the coal conveyor system, follow established hot work/cutting and welding procedures.

## **B.14 Car Shakers and Dumpers**

- B.14.1** Only tools approved by the company shall be used for releasing doors on hopper-type cars.
- B.14.2** Car shakers shall be shut off before employees climb onto the car, and car shall not be moved until all personnel are out of the car.
- B.14.3** Employees engaged in car-shaker operations shall use suitable eye protection, hearing protection and respiratory equipment, as prevailing conditions dictate.



- B.14.4** Cars shall not be moved through the car dumper for refueling purposes.
- B.14.5** Only coal cars shall be permitted on the car-dumper and car-shaker tracks.
- B.15 *Barges, Boats, Tugs and Docks***
  - B.15.1** Before boarding any vessel or other floating equipment, all persons shall be wearing an approved flotation device that is properly fastened. Inspect flotation devices regularly and immediately replace defective devices.
  - B.15.2** Only qualified employees shall operate company boats.
  - B.15.3** The lifeboat and workboats shall, at all times, be equipped with a pair of oars and a ring buoy attached to a 90-foot, coiled, half-inch line attached to the boat.
  - B.15.4** Docks and walkways shall be maintained in safe condition at all times. All walkways shall be appropriately positioned and secured.
  - B.15.5** Employees shall stay clear of barge cables while barges are being moved.
  - B.15.6** When barges are moored at docks, the mooring lines shall be loose enough to allow sufficient movement of the barge to keep sway from passing boats from breaking lines — yet shall be tight enough to permit the passage of personnel from dock to barge.
  - B.15.7** When material unloading is in progress:
    - a.** Do not enter the machinery room unless it is absolutely necessary.
    - b.** Do not walk under any area where you could be hit if the bucket dumps prematurely.
  - B.15.8** Follow established procedures for pulling barge covers.
  - B.15.9** Cargo boxes are confined spaces. Follow the established confined-space procedures.
  - B.15.10** Tugboat decks shall be clean and free of tripping hazards. Barge gunwales, walkways and end decks shall be cleared of loose coal.
  - B.15.11** Do not attempt to operate a tug unless you have been trained and hold a pilot's license issued by the U.S. Coast Guard.
  - B.15.12** Only trained personnel will serve as deckhands.
  - B.15.13** Unloader buckets shall always be lowered before the unloader is left unattended.
  - B.15.14** Tugs shall be equipped with a lifeboat that has two oars available.
  - B.15.15** Ensure that all tug and barge unloader guardrails or chains are in good condition.
  - B.15.16** Inspect barge and tug cables/ropes/sheaves frequently and report any defective equipment.

- B.15.17** Exercise extreme caution when walking or working on barges, and watch for ice, loose coal or open hatches. Always step over — never on — manhole covers.
- B.15.18** Keep away from lines and cables that are under tension; don't step over lines and cables.
- B.15.19** Do not lean over the side of a barge to grab a line. Use a pike pole.
- B.15.20** Keep hands and feet from between barges, and from between barges and docks.
- B.15.21** If a mooring rope must be cut, use extreme caution and use tools that will allow you to stay clear of the swing of the rope when it is cut.
- B.16 *Railway Operations***
  - B.16.1** Only authorized employees shall operate locomotives.
  - B.16.2** Operate locomotives according to established procedures.
  - B.16.3** Before moving a locomotive, the operator shall give a proper warning. The operator shall always sound a warning when approaching a walk or driveway, when passing cars on an adjacent track or when passing any structure obscuring the operator's vision.
  - B.16.4** When manually operating a locomotive, operators shall not move the locomotive when they are unable to see or communicate with their switchperson.
  - B.16.5** Employees shall not ride on the footboards of locomotives.
  - B.16.6** Switchpersons shall use adequate signaling devices and standard railroad signals when working in conjunction with locomotive engineers — hand signals or appropriate flag for daytime use, or lantern or red flares at night — for switching purposes.
  - B.16.7** Employees shall use the steps when boarding or alighting from a railroad locomotive or car. A close lookout shall be kept for trains or cars on adjacent tracks and for obstructions which might cause injury.
  - B.16.8** Only in emergencies shall a locomotive be returned from empty yard through the car shaker — and then only after the operator has obtained clearance from the car-shaker operator.
  - B.16.9** Work (except testing procedures) shall not be performed on locomotives while they are moving. Employees shall not walk on top of railroad cars in motion.
  - B.16.10** Locomotives shall not be operated at unsafe speeds. The train shall be kept under control at all times.
  - B.16.11** Whenever the locomotive engines are shut off, the hand brake shall be set. The operator key (lever) shall not be left in an unattended locomotive.

- B.16.12** Locomotive operators shall follow all signals carefully. If signals are not fully understood, operators shall not move the train until clarification has been made.
- B.16.13** Employees engaged in switching or dumping cars shall not line up drawheads with their feet.
- B.16.14** Drawheads or knuckles shall not be shifted while locomotives or cars are in motion.
- B.16.15** Flying switches shall not be made.
- B.16.16** Employees shall not jump from one car to another while either is in motion.
- B.16.17** Cars shall not be spotted where they will foul another track.
- B.16.18** When shoving cars, the operator shall protect the front end of the train.
- B.16.19** Employees shall not go between cars, or board or leave locomotive cranes or cars while such equipment is in motion.
- B.16.20** When a car is spotted for unloading on other than level ground, it shall be held in place by approved blockers in addition to setting the brakes.
- B.16.21** Cars and equipment marked with a blue flag shall not be moved.
- B.16.22** When a string of cars has been separated at a crossing or walkway, the cars shall not be re-coupled unless the operator is at the crossing.
- B.16.23** Employees shall not walk, stand or sit on tracks except when necessary for the proper performance of duty. Caution shall be used when working or walking along railroad tracks.
- B.16.24** Employees shall cross or walk on tracks at a safe distance from cars or locomotives.
- B.16.25** Employees should expect trains, engines and cars to move at any time.
- B.16.26** Approved car movers shall be used for moving cars by hand.
- B.16.27** Companion ways and catwalks must be kept free of tools and materials.
- B.16.28** Employees shall not crawl under or work beneath cars or locomotives unless the wheels have been blocked in both directions and warning flags are placed at both ends.
- B.16.29** Emergency safety keyswitches and pull-ropes should be checked frequently and maintained in good condition.
- B.16.30** Pulley drives, gearing, motor couplings and idlers at sealing strips shall be adequately guarded.
- B.16.31** When a railroad car is stopped for unloading, the car shall be secured from displacement that could endanger employees.

- B.16.32** Keep all switches clean and well lubricated.
  - B.16.33** Locomotive operators must ensure that switches and crossings are observed as needed.
  - B.16.34** Follow established procedures when connecting 110-volt power to the locomotive charging system.
- B.17     *Mechanized Equipment***
- B.17.1** Operate mechanized equipment only after receiving thorough training and instruction.
  - B.17.2** Operate equipment according to the manufacturer's instructions and only from the operator's position with the seat belt in use.
  - B.17.3** Exercise caution while climbing on or off the equipment, especially during slippery conditions. Face the equipment; ensure secure hand and foot placement and use the hand-hold and the steps or rungs as provided.
  - B.17.4** Check safety devices and operating mechanisms before use for proper operation (examples: controls, fluid levels and hydraulic systems).
  - B.17.5** Use only the attachments provided by — or approved by — the manufacturer or supervisor.
  - B.17.6** Make modifications or repairs and replace parts only as approved by the manufacturer or supervisor.
  - B.17.7** Whenever possible, position the equipment so as to avoid backing.
  - B.17.8** When backing a piece of equipment which has an obstructed view to the rear:
    - a.** The equipment shall have a reverse signal alarm audible above the surrounding noise level; or
    - b.** The equipment is to be backed only when an observer signals that it is safe to do so.
    - c.** Carefully check any blind areas.
    - d.** Watch both sides but **do not** depend entirely on the mirror(s).
    - e.** Back up slowly.
  - B.17.9** When possible, position the equipment to obtain a clear view of the operation (examples: digging, hauling, dumping and pushing material).
  - B.17.10** Ensure sufficient clearance between the equipment and overhead or other energized electrical equipment.
  - B.17.11** Maintain a sufficient distance from unsafe conditions which might result in equipment rollover. Consider the degree of the slope and the surface condition.
  - B.17.12** When personnel are in the work area, establish adequate verbal or visual communications.

- B.17.13** Do not use the blade, bucket, boom or fork as a brake unless emergency conditions prevail.
- B.17.14** Do not dismount equipment until it has been brought to a complete stop.
- B.17.15** When parking on an incline is unavoidable, chock the equipment.
- B.17.16** Do not ride or permit riders except on seats provided by the manufacturer.
- B.17.17** Tools and materials shall be secured to prevent their movement when transported in the same compartment with employees.
- B.17.18** Haul roads shall be sprinkled, watered or chemically treated, as needed, to minimize dust and maintain visibility when the road is in use.

## **B.18 High- and Low-Voltage Circuits and Equipment**

*See written Energy Services Electrical Safety Program for:*

- *specific PPE requirements for exposure to electrical shock and/or arc flash;*
- *energized electrical work permit requirements; and*
- *shock and arc flash protective barriers.*

- B.18.1** Before beginning work on any electrical system or equipment:
  - a.** Live electrical parts to which an employee might be exposed shall be put into an "electrically safe work condition" — applying energy isolation procedures before performing work — unless de-energizing is infeasible due to equipment design or operational limitations, or it introduces an additional or increased hazard.
  - b.** A voltage test shall be conducted. **Note:** *Always verify proper operation of the testing equipment and its leads.*
  - c.** The equipment shall be grounded when applicable.  
**Note:** *In order to declare the existence of an "electrically safe work condition," the following shall be accomplished:*
    - a.** Determine all possible sources of energy, to include temporary and back-up power sources.
    - b.** After properly interrupting the load, open all disconnecting devices for the circuit.
    - c.** Where possible, visually verify that all disconnect devices are open.
    - d.** Apply energy isolation procedures, LOTO.
    - e.** Voltage test shall be conducted to verify the absence of voltage on each point where physical contact is expected.
    - f.** Where possible induced voltage or stored energy exists, ground when applicable.
- B.18.2** Only qualified employees shall work on or near energized lines or equipment.

- B.18.3** Any defective electrical equipment or tool should be immediately reported to plant management.
- B.18.4** All housings, enclosures and cabinets shall be labeled to indicate the voltages contained within. Arc flash hazard danger labels shall also be affixed.
- B.18.5** Never use a portable metal ladder in the vicinity of energized equipment.
- B.18.6** Eye and face protection, arc-rated face shield with chin guard, hard hat and low-voltage rubber insulating gloves with protectors shall be worn when working on, or in the vicinity of, lines or equipment for which one may be exposed to voltages between 50 volts and 600 volts phase-to-phase. The same shall apply for operating open knife switches.
- B.18.7** Only insulated tools and/or handling equipment shall be used for making energized low-voltage connections, or when work is performed within energized switch breaker compartments.
- B.18.8** When work is to be done on energized lines or equipment, all energized and grounded conductors that may be shorted with tools or may be touched by the worker should be insulated or barricaded with a nonconductive material when possible.
- B.18.9** Only approved low-voltage (six- or 12-volt) lighting, or 110-volt lighting operated through a circuit protected by a GFCI (ground fault circuit interrupter), shall be used in boilers, tanks and other pressure vessels and in wet/damp areas. The low-voltage transformer or the GFCI must always be located on the outside of the vessel or wet/damp area.
- B.18.10** Eye and face protection shall be worn during soldering of electrical components.
- B.18.11** Portable electric power hand tools and test equipment used for electrical work shall be:
  - a.** double-insulated, or
  - b.** grounded and used in conjunction with a GFCI.
- B.18.12** All electrical power tools shall be examined prior to use to insure general serviceability and the presence of all applicable safety devices.
- B.18.13** When working in the vicinity of energized conductors and equipment, employees shall not wear exposed metal articles such as key or watch chains, necklaces, rings, wrist watches, bands, bracelets or metal hearing-protector bands.
- B.18.14** Manual switches and disconnects shall always be closed by a continuous motion. Care should be exercised when opening switches to avoid serious arcing.
- B.18.15** Molded-case switches, circuit breakers or other devices



designated and designed for operation under the load involved — including molded-case breakers, lighting panels, and welding outlet disconnect switches — may be operated without the use of electrical gloves, as long as no energized exposed conductor greater than 50 volts is within four feet of the employee.

- B.18.16** Fuses shall be installed and/or removed by use of insulating handles and electrical gloves rated for the voltage involved.

**B.19** ***Use and Care of Rubber Insulating Gloves — Class 0 Low-Voltage***

- B.19.1** Only qualified employees or those under the continuous supervision of a qualified technician shall work on or use test equipment on lines or equipment energized in excess of 50 volts.
- B.19.2** Class 0 low-voltage gloves with leather protectors shall be worn when working on lines or using test equipment or equipment energized at voltages between 50 volts and 600 volts phase-to-phase.
- B.19.3** Low-voltage gloves shall never be worn inside-out or without leather protectors. They shall be exchanged at any time they become damaged or the integrity is suspect.
- B.19.4** Class 0 low-voltage gloves shall not be used for purposes other than electrical work. Damaged gloves shall be returned to the Glove Lab.
- B.19.5** Low-voltage gloves shall be inspected each day for damage, and shall be given an air test before each use.
- B.19.6** When not in use, low-voltage gloves shall be kept in an approved storage bag or container. Gloves shall not be exposed to sharp objects or direct sunlight. Gloves shall never be folded during storage. Gloves should be stored with the cuffs down to permit drainage and ventilation.
- B.19.7** Low-voltage gloves shall be tested and date-stamped at intervals not to exceed 90 days. The expiration date is stamped on the cuff.

**B.20** ***Use and Care of Rubber Insulating Gloves — Class 2 High-Voltage***

- B.20.1** Only qualified employees or those under the continuous supervision of a qualified technician shall work on or use test equipment on lines or equipment energized in excess of 50 volts.
- B.20.2** Class 2 high-voltage gloves with leather protectors and rubber sleeves shall be worn when working on lines or using test equipment or equipment energized at voltages above 600 volts phase-to-phase.
- B.20.3** High-voltage gloves shall never be worn inside-out or without leather protectors. They shall be exchanged at any time they become damaged or the integrity is suspect.

- B.20.4** Class 2 high-voltage gloves shall not be used for purposes other than approved work.
- B.20.5** High-voltage gloves and sleeves shall be inspected each day for damage, and the high-voltage gloves shall be given an air test before each use.
- B.20.6** When not in use, high-voltage gloves shall be kept in an approved storage bag or container. Gloves shall not be exposed to sharp objects or direct sunlight. Gloves and sleeves shall never be folded during storage. Gloves should be stored with the cuffs down to permit drainage and ventilation.
- B.20.7** High-voltage gloves and sleeves shall be tested and date-stamped at intervals not to exceed 90 days. The expiration date is stamped on the cuff.

**B.21** ***Batteries; Battery Rooms***

- B.21.1** Enclosed areas used to charge or store batteries shall be adequately ventilated. Report any defective ventilation equipment.
- B.21.2** Smoking and the use of open flames, cutting, welding and the use of tools that could produce sparks in battery rooms and enclosures that contain batteries shall be avoided (exception: when following plant cutting/welding or hot-work procedures). "No Smoking" signs shall be conspicuously posted in such areas.
- B.21.3** Employees shall wear adequate clothing (i.e., protective apron and overshoes, approved gloves, eye/face protection) when installing or servicing storage batteries. Such apparel shall be made of non-conductive materials.
- B.21.4** Precautions shall be taken to avoid shock or electric arc when working within battery-charging areas.
- B.21.5** Lighting fixtures, ventilating ducts, communication equipment and other fixtures having parts that may be dropped or which might work loose in service should not be installed directly over batteries. If such an installation cannot be avoided, care shall be taken to protect the battery from a short circuit.
- B.21.6** Whenever work must be performed in a location or position from which items such as tools and equipment may be accidentally dropped upon a station storage battery, proper measures shall be taken to protect the battery before the work is started.
- B.21.7** When electrolyte is made for storage batteries, the acid shall be poured slowly into the water. Water shall not be poured into the acid.
- B.21.8** If battery acid gets into an employee's eye(s), the eye(s) shall be flushed immediately at an eye-wash station for several minutes. Do not rub the eye. Seek medical treatment promptly.

- B.21.9** If battery acid contacts one's body or clothing, the employee shall promptly wash with plenty of water.
- B.21.10** Good housekeeping practices shall be maintained in battery-storage and -charging areas.
- B.21.11** Water for drenching eyes shall be kept unobstructed within 25 feet of battery-handling areas.

## **B.22 Hydro Stations**

- B.22.1** Whenever it is necessary to work in a location where there is a possibility of falling into dangerous water, employees shall wear a life jacket approved by the U.S. Coast Guard.
- B.22.2** Rigging equipment shall be inspected before and after use.
- B.22.3** Employees shall be protected from falling by secured guardrails or the use of approved harness and lanyards.
- B.22.4** The hold card/red tag and confined-space procedure shall be implemented before entering penstocks, scroll cases and similar water passages.
- B.22.5** Internal work performed on a generator shall be under the protection of the station hold card/red tag procedure.
- B.22.6** Employees working on or close to water gates, valves, intakes, forebays, flumes or other locations where increased or decreased water flow or levels may pose a significant hazard shall be warned before water flow changes are made.
- B.22.7** Employees using boats shall wear life jackets approved by the U.S. Coast Guard.
- B.22.8** Work performed inside tanks, tunnels, conduits, deep manholes or other confined spaces shall conform to established confined space procedures.

## **B.23 Scrubbers; Sludge Process**

- B.23.1** Entry into absorber modules, booster fans or tanks, etc., shall be in accordance with established confined space procedures.
- B.23.2** Prior to performing any inspection or repair work on any equipment, one shall insure that the necessary valves, switches, control devices and any other operating mechanisms have been positioned, secured, electrically disconnected and carded in accordance with established hold card/red tag procedure.
- B.23.3** Employees shall use low-voltage lights or ground fault circuit interrupters while working in such places as absorber modules, booster fans, tanks, etc.
- B.23.4** Prior to closing up equipment such as absorber modules, booster fans, I.D. fans or tanks and making them ready for operation, a careful check shall be made to ensure no one has been left inside.
- B.23.5** During yard operating and maintenance work, appropriate

personal protective equipment shall be used, including goggles, face shield, safety harness, etc., as deemed necessary for the work activity.

- B.23.6** Areas that contain scrubber slurry such as thickeners, thickener return tanks, sumps, etc., have the potential for hydrogen sulfide being formed. Appropriate precautions shall be taken when this condition exists.
- B.23.7** Extreme caution shall be used when performing clean-up work in and around any conveyor belts. Jewelry or loose clothing shall not be worn when work is performed around moving conveyor belts.
- B.23.8** One shall not climb on or over conveyor belts at any time, unless equipment is otherwise made safe. Follow established hold card/red tag procedures.
- B.23.9** When preparing a slurry barge for unloading:
  - a.** Always connect the ground cable first, and remove it last when connecting or disconnecting electrical leads.
  - b.** At least two employees shall board the work dock; never one alone.

## **B.24 Carbon Dioxide (CO<sub>2</sub>) — Combustion Turbines**

**Note:** Carbon dioxide is a colorless, odorless and electrically nonconductive gas. CO<sub>2</sub> extinguishes fire by reducing the concentration of oxygen in the air to the point where combustion stops. For this reason, CO<sub>2</sub> is considered an asphyxiate. CO<sub>2</sub> has specific gravity of 1.65, and high concentrations can gather and exist in below-grade areas. The current OSHA PEL (8 hr. TWA) is 5,000 ppm; concentrations of 10 percent (100,000 ppm) or more can cause unconsciousness or death. Lower concentrations may cause headaches, nausea, vomiting, rapid breathing, increased heart rate, dizziness and visual disturbances. Discharge of pressurized CO<sub>2</sub> into the atmosphere results in release of extremely cold CO<sub>2</sub> snow particles (dry ice). Skin contact with these particles can cause frostbite or cryogenic "burns."

- B.24.1** Leaks and emergencies shall be handled only by qualified persons. Ventilate adjacent enclosed areas to prevent the formation of lethal concentrations of CO<sub>2</sub>. Personnel — including rescue workers — shall not enter areas in which the CO<sub>2</sub> content exceeds three percent by measurement, unless wearing a self-contained breathing apparatus or air-line respirator.
- B.24.2** If a person has inhaled large amounts of CO<sub>2</sub> and is exhibiting adverse effects, move the exposed individual to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the person warm and at rest. Summon medical attention at once. Fresh air and assisted breathing are appropriate for all cases of overexposure to gaseous carbon dioxide.

## **B.25 Natural Gas (Methane) — Combustion Turbines**

**Note:** Natural gas is a naturally occurring, colorless, odorless (unless commercially odorized) and highly flammable material. Natural gas is non-toxic, but can act as a simple asphyxiate by displacing air. The specific gravity of natural gas is .55 (air =1). That means it is approximately half as light as air, and will dissipate in well-ventilated areas. The lower explosive limit is 3.6 percent; the upper explosive limit is 17 percent. The NFPA Hazard Rating for natural gas is: Health = 1; Fire = 4; and Reactivity = 0. Signs of exposure include rapid fatigue, nausea and vomiting.

- B.25.1** Monitors shall be utilized for detecting leaks. Alternatively, leak detection solutions will indicate leakage through bubble formation.
- B.25.2** Eliminate all sources of ignition until leaks have been repaired.
- B.25.3** Shut off the sources of gas and lower the pressure in the system prior to repairing a leak.
- B.25.4** Leak-test systems prior to returning system to service.
- B.25.5** Fire fighting procedures should include elimination of gas supply before attempting to extinguish.
- B.25.6** Only personnel specifically trained and wearing appropriate personal protective equipment shall be permitted to work at the fire scene.
- B.25.7** Inhalation of low concentrations can be remedied by promptly going to an uncontaminated area and inhaling fresh air or oxygen. If breathing has stopped, perform artificial respiration. Oxygen should be administered after breathing has been restored.

## **B.26 Scaffolds — Tagging**

- B.26.1** The intent of scaffold tagging is to assure that personnel perform their work from a scaffold that is complete and constructed in accordance with safety and health rules and OSHA regulations. If there is a conflict between LG&E and KU safety and health rules, contractor's safety program rules and governmental regulations, the most restrictive rules shall apply.
- B.26.2** All personnel shall comply with this scaffold tagging requirement. Scaffolds not displaying a signed scaffold tag shall not be used.
- B.26.3** In addition to these guidelines, all employees are subject to the OSHA scaffold requirements.
- B.26.4** The company's authorized representative shall be responsible to ensure contractors tag their scaffolds in accordance with the scaffolding-tagging requirement.
- B.26.5** Scaffold tags shall conform to the following color codes and wording.

- a. Green Tag** — "This scaffold was built to meet Federal OSHA scaffold regulations; it is safe to use."
- b. Yellow Tag** — "This scaffold does not meet Federal OSHA scaffold regulations; body harness shall be worn."
- c. Red Tag** — "This scaffold is not complete; DO NOT USE."

- B.26.6** The competent person whose crew constructed the scaffold shall inspect the scaffold for compliance with OSHA requirements and shall sign the tag.
- B.26.7** All scaffolds that cannot be equipped with standard top rail, midrail and toeboard because of interference with structures or equipment shall be marked with a yellow tag stating that "body harness must be used." Scaffolds being constructed or torn down, or which are incomplete, shall be marked with a red tag.
- B.26.8** The competent person shall periodically monitor all scaffolds. The auditing shall ensure that all scaffolds are properly tagged and in compliance with OSHA standards.
- B.26.9** Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift and after any occurrence which could affect a scaffold's structural integrity.
- B.26.10** In the event that a work group chooses to use another contractor's or crew's scaffold, they shall obtain permission to use the scaffold and insure the competent person has inspected and tagged the scaffold before use.
- B.26.11** For additional or specific scaffold requirements, see Section A.22.

## **B.27 Radiation**

- B.27.1** The use, handling, transporting or storing of radioactive materials shall be restricted to those employees who are properly authorized to do so, or to qualified persons under the direction and supervision of a licensee.
- B.27.2** Radioactive materials not in use shall be stored in a safe, approved place and be adequately secured against unauthorized removal.
- B.27.3** The loss of radioactive materials, or damage to their containers, shall be reported immediately to the proper company authorities.
- B.27.4** Unauthorized persons shall be kept at a safe distance from areas in which radioactive materials are used or stored.
- B.27.5** Areas where radioactive materials are used or stored shall be conspicuously and adequately posted with approved signs and labels.
- B.27.6** Adequate protection, including monitoring equipment, shall be provided for, and used by, personnel handling radioactive materials.

- B.27.7** Special precautions shall be taken to prevent accidental fires in areas where radioactive materials are used or stored. Should a fire occur, responding personnel must be notified of exposure hazards.
- B.27.8** If an employee inadvertently handles — or is exposed to — unshielded radioactive materials, that employee shall immediately report the incident so that proper medical attention can be provided.
- B.27.9** Consult your facility's radiation emergency procedure in the event of a radiation emergency. Take the following steps immediately for a radiation incident.
  - a.** All unnecessary personnel shall leave the area.
  - b.** Shut off ventilation fans.
  - c.** Barricade the area.
  - d.** Notify plant management and the radiation officer.
  - e.** Those with possible exposure shall be checked for contamination.
  - f.** Regulate entry to the scene.
  - g.** Maintain complete records of the incident.

## **C. Transmission**

### **C.1 *Electrical Work Practices***

- C.1.1** Before work is commenced, a job briefing (tailgate conference) shall be held with all employees to orient each employee as to:
- a.** The hazards associated with the job.
  - b.** The work procedures involved.
  - c.** Any special precautions to be taken.
  - d.** All energy source controls.
  - e.** Personal protective equipment required.
- The job briefing shall be documented and a copy maintained for a minimum of 30 calendar days.
- C.1.2** Electrical equipment and lines shall always be considered as energized unless they are positively known to be dead and grounded. Before work is started on energized equipment or circuits, a preliminary inspection (or test) shall be made to determine existing conditions.
- C.1.3** When employees are working and find a condition that they cannot handle safely, they shall call for assistance.
- C.1.4** Only qualified employees and trainees working under their direct supervision may work on or with exposed energized lines or parts of equipment operating at 50 volts or more, and must be familiar with the minimum working clearance and approach distances.
- (See Table C-1 — Minimum Approach Distance.)
- C.1.5** Two employees shall not contact separate energized primary phases while working from the same pole, structure or aerial lift.
- C.1.6** At least two employees shall be present while the following types of work are being performed:
- a.** Installation, repair or removal of lines energized at more than 600 volts.
  - b.** Installation, repair or removal of de-energized lines or equipment such as transformers, capacitors and regulators, if an employee is exposed to contact with other parts energized at more than 600 volts.
  - c.** Work involving the use of mechanical equipment, other than insulated lifts, near parts energized at more than 600 volts.
  - d.** Any other work that exposes an employee to electrical hazards greater than or equal to those listed above.
- C.1.7** At least two employees do not need to be present in the following operations.
- a.** Routine switching of circuits.
  - b.** Work performed with insulated switch sticks or live-line tools,



if the employee is positioned so that he/she is not within reach of — or otherwise exposed to — energized parts.

- c. Emergency repairs necessary to safeguard the general public, as long as approved tools and proper protective equipment are used.

- C.1.8** No employee may approach or take any conductive object without an insulated handle closer to exposed energized parts than the clearances set forth in Tables C-1, C-2 and C-3, unless:
  - a. The employee is insulated from the energized part.
  - b. The energized part is insulated from the employee and any other conductive object at a different potential.
  - c. The employee is insulated from any other conductive object, as during live-line work.
- C.1.9** Employees shall avoid working on circuits or equipment from such a position that a shock or slip might bring his/her body toward exposed energized parts. Whenever practicable, work on energized lines and equipment shall be performed from below.
- C.1.10** In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, employees shall first attach the wire to the de-energized part. When disconnecting, employees shall remove the source end first. Loose conductors shall be kept away from exposed energized parts.
- C.1.11** Employees shall immediately report to the nearest supervisor any defective line, apparatus, tool or other condition which, in their judgment, may be dangerous — either to persons or property — or likely to interrupt or delay service.
- C.1.12** Employees shall use extreme caution when removing or replacing fuses which are energized on either side. Cartridge fuses shall be removed and replaced with approved fuse pullers, fuse tongs or rubber gloves. Screwdrivers, pliers, etc., shall not be used for this purpose.
- C.1.13** Extreme caution shall be exercised when handling common-neutral conductors, as high voltage may be encountered. Whenever needed, temporary jumpers of adequate size shall be properly connected and secured before energized equipment grounds and energized circuit neutrals are opened.
- C.1.14** Employees fighting fires near exposed energized electrical parts shall use fire extinguishers or materials which are suitable for this purpose. If this is not possible, the adjacent and affected equipment shall first be de-energized.
- C.1.15** When two or more employees are performing work on — or associated with — exposed lines or equipment energized at 50 volts or more (except as noted in C.1.7), at least two persons

trained in first aid and cardiopulmonary resuscitation (CPR) shall be available. (Only one trained person needs to be available if all new employees on the job are to be trained in first aid and CPR within three months of their hiring dates.)

## **C.2 Flexible and Rigid Insulated Protective Equipment (Rubber, Fiber, Synthetics, etc.)**

- C.2.1** Employees shall not touch or work on any energized lines or equipment except when wearing protective equipment for the voltage to be contacted.
- C.2.2** Whenever any part of an employee's body may touch a conductor, or if an employee is to handle a conductive device or tool within the minimum working and clear hot-stick distances, he/she shall cover, with insulating protective equipment, the conductor, conductive device or tool within reach of any part of the body except that part of the conductor or equipment on which he/she is working.
- C.2.3** When working on an energized line or apparatus — including the installation or removal of protective devices — work should be done from below if possible.
- C.2.4** In applying insulating protective equipment, employees shall always protect the nearest and lowest wires first, providing protection as progress is made. In removing insulating protective equipment, the reverse order shall be maintained.
- C.2.5** Flexible blankets should not be used on the ground without protecting them from physical damage and moisture by means of a tarpaulin canvas or protective mat.
- C.2.6** Line hoses, hoods, blankets, line guards, etc., shall be visually inspected before each use. Hoses, hoods, blankets and other cover-up materials shall be maintained in a clean, safe condition.
- C.2.7** All insulating protective equipment shall be thoroughly cleaned (with approved cleaning agents) periodically, as needed, to remove foreign substances, and shall be wiped clean of oil, grease or other damaging substances as soon as practicable.
- C.2.8** Flexible protective devices shall be stored in special compartments, on trucks and elsewhere, where they will not be subjected to damage from tools, sunlight or other equipment.  
***There shall be a sufficient quantity of insulating protective devices as may be required by the person or crew for the job being done.***
- C.2.9** Suitable lines and tool bags shall be used for raising and lowering materials, tools and protective equipment. Employees shall not throw anything from a pole or structure or permit anything to be thrown to them.
- C.2.10** If a job requires an employee to stand on a rubber protective

blanket, it shall not be used again until tested by the Glove Lab.

- C.2.11** Bare communication conductors shall be treated as energized or grounded and shall be protected accordingly.

### **C.3 Use and Care of Rubber Goods**

- C.3.1** Only qualified employees, or those under the continuous supervision of a qualified employee, shall work on energized lines or equipment.

- C.3.2** Employees shall wear Class 0 rubber gloves with leather protectors when working on lines or equipment energized at 50 to 600 volts. Low-voltage gloves are required personal protective equipment when:

- Working in an energized meter base or panel, making contact with the energized terminal or parts.
- Working with bottom-connect-type meters.
- Removing or installing energized three-phase, self-contained meters. **Note:** *Face shields are required additional personal protection for 480-volt meter change-outs.*
- Working on the test block for PT and CT metering installations.
- Working energized services and secondary.

- C.3.3** Low-voltage gloves are not required personal protective equipment when:

- Working a turn-on or turn-off and changing out a meter (involving single-phase, self-contained socket-type meters).
- Relamping street lights.
- Making ampere and voltage checks with approved test equipment on circuits or equipment energized at 300 volts or less, provided no physical contact is being made with energized parts.

- C.3.4** Employees shall wear Class 2 rubber gloves with leather protectors and Class 2 rubber sleeves when working on lines or equipment energized at 600 to 15,000 volts.

- C.3.5** **Five-Foot Rule:** When working on lines or equipment which are energized or may become energized at voltages from 600 to 15,000 volts, Class 2 rubber gloves and sleeves shall be used. They shall be put on before the employee comes within five feet of such lines or equipment, regardless of whether or not such lines or equipment are covered by insulating protective equipment. They shall not be removed for any reason until the employee is entirely out of the five-foot clearance of such circuits or apparatus. The *Five-Foot Rule* takes precedence over the clearance Table C-1 for voltages up to 15KV.

**Exception:** *In certain applications, such as installing or removing transformers on straight-line poles (single- or three-phase), there*

*is an exception to the Five-Foot-Rule. After the circuits have been adequately covered or guarded with insulating protective equipment, the qualified employee in charge may allow employees to remove rubber gloves and sleeves outside of the two-foot-one-inch minimum approach distance referenced in Table C-1 for voltages up to 15KV. Under no circumstances can the person in charge be the person doing the work.*

- C.3.6** Class 2 rubber gloves with leather protectors and Class 2 rubber sleeves shall be worn when:
- Working on — or within five feet of — any electrical equipment or metal surfaces (cross-arms, cross-arm braces or transformer cases, etc.) which are not effectively grounded, and which may be — or may become — energized from 600 to 15,000 volts.
  - Working during wet or stormy weather within five feet of any conductor or equipment which may become energized at any voltage.
  - Required by supervisor.
  - Operating manually controlled air-break switches. The handle and other parts of air-break switches shall not be contacted with any part of the body except the parts protected by rubber gloves and sleeves.
  - Opening, closing, removing or replacing hot line clamps, fuses or fuse door on cutouts, even when using an approved switch stick. **Exception to the previous statement:** *A properly maintained, heavy-duty fiberglass extendo stick that has been tested and labeled with a test date may be used while standing on the ground without rubber gloves and sleeves, except in inclement weather.*
  - Making tests to determine if lines are energized and applying or removing grounding devices.
  - Working on or near series street lighting circuits even though they are disconnected from their source.
  - Repairing series fixtures or attachments with the circuit exposed to energized conductors. One exception would be if the fixtures are disconnected from the line.
  - Pulling in wire or handling other conductive materials near circuits, apparatus or equipment which is or may become energized.
  - Working on or near telephone or other circuits which are subject to induced voltages from energized high-voltage circuits, unless the circuits to be worked are adequately grounded.

- k. Making the initial voltage check on new transformer installations.
- l. Connecting driven grounds to neutrals or static wires when circuits are energized.

**See rules for underground residential distribution, Section D.**

- C.3.7** Rubber gloves, sleeves and blankets shall be subjected to approved electrical tests at intervals not to exceed 90 days.
- C.3.8** Rubber gloves and sleeves shall be inspected daily for corona cracks or other damage and shall be given an air test at least once a day while in use. This should be done at the beginning of the work period and at any other time when their condition is in doubt. They shall be visually checked before each use.
- C.3.9** Rubber gloves and sleeves shall never be worn inside-out or without leather protectors. Rubber gloves or sleeves shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of damage.
- C.3.10** Leather protectors shall not be worn except when in use over Class 2 or Class 0 rubber gloves.
- C.3.11** Rubber gloves and sleeves, when not in use, shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored, nor shall other objects be placed upon them.
- C.3.12** Rubber gloves shall be stored in a glove bag with the cuffs down to permit drainage and better ventilation, and reduce the possibility of damage due to objects falling into the glove.
- C.3.13** When working with rubber protective equipment on energized circuits or apparatus where the voltage between any two conductors is more than 600 volts, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment.
  - a. Class 2 rubber gloves and sleeves shall be used.
  - b. Employees shall not make physical contact with protective devices installed on energized primary conductors with other than their rubber gloves and sleeves.
  - c. Employees shall be isolated from all grounds (wooden poles shall be considered as grounds), by using approved supplementary insulation such as aerial baskets, insulated platforms, hook ladders or other approved means of isolation.
- C.3.14** When it is necessary to pass through or near circuits energized at 600 volts and above in order to reach a working area above (for example, to work on transmission circuits underbuilt by these lower-voltage circuits) they must be tied out with live-

line maintenance tools or covered with approved protective equipment (rubber or fiber). Approved protective equipment must be properly installed with live-line maintenance tools or from an insulated platform (aerial basket, insulated platform or hook ladder).

- C.3.15** If the circuits to be passed through are energized at voltages above 15,000 volts between phases, they must be tied out with live-line maintenance tools.

## **C.4 Personal Climbing Equipment**

### **Body belts**

- C.4.1** Only approved belts and approved fall protection equipment (FPE) shall be used.
- C.4.2** All equipment shall be inspected before each use. Any found damaged or excessively worn shall not be used.
- C.4.3** Climbing belts shall comply with the standards described by KOSHA 1926.959, which states that when tool loops are placed on a line technician's body belt, the maximum shall be no greater than four. Tool loops on a body belt shall be placed on the belt in such a way as to allow four inches in the back center of the belt to remain unobstructed by loops or other attachments (measuring from D-ring to D-ring) so that in case of a fall, the chance of injury will be lessened.
- C.4.4** FPE having double-locking snap hooks shall be worn by employees working at elevated locations on poles, ladders, towers, or other structures except where such use creates a greater hazard to the safety of the employee — in which case, other safeguards shall be used.
- C.4.5** Before an employee trusts his/her weight to a climbing belt or a similar device, a determination shall be made that the double-locking snaps are properly engaged, and that the employee is secure on the structure.
- C.4.6** Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belts. Leather or other non-conducting material shall be used for this purpose.

### **Climbers**

- C.4.7** Climbers shall be inspected before each use. Damaged or excessively worn straps, or missing or broken screws, shall be replaced before climbers are used.
- C.4.8** Gaffs shall be kept within safe length limits (1¼ inches, minimum), properly shaped, sharp and free of burrs. Gaffs shall be tested for wear and shape by using a gauge recommended by the manufacturer.



- C.4.9** Pole gaffs shall not be used for tree climbing.
- C.4.10** Employees shall not wear their climbers while driving, riding in vehicles, working on the ground or working on ladders (except hook ladders). Climbers shall be put on and removed as close to the pole as safety permits.
- C.4.11** When climbers are stored in the truck or tool room, the sharp gaff points shall be covered with suitable gaff guards so they will not damage other equipment or cause personal injury.

#### **Body Harnesses**

- C.4.12** A harness attached to a lanyard with a double-locking snap hook shall be worn while working from or riding in an aerial device. Lanyards shall be made of nylon and equipped with a double-locking snap, and shall be no longer than six feet.

#### **Working on Poles**

- C.4.13** Before any pole is climbed, employees shall first:
  - a. Inspect all equipment before each use. If any equipment is found to be damaged or worn, it shall be repaired or replaced.
  - b. Inspect the pole to determine if it is safe to climb and that it is capable of sustaining the additional or unbalanced stresses to which it will be subjected.
- C.4.14** Poles that are determined to be unsafe to climb shall be made safe by guying, bracing or other adequate means. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to it in lieu of guying.
- C.4.15** *Deleted*
- C.4.16** Fall-protection equipment shall be used in accordance with the manufacturer's direction when ascending or descending.
- C.4.17** A handline shall be taken aloft whether climbing or using an aerial device.
- C.4.18** Employees shall not climb or work on an elevated pole or structure without first securing themselves with FPE.
- C.4.19** The safety strap shall not be put around a pole above the uppermost pole attachment, except where the pole top or attachment is above eye level. It shall not be used on pole steps, crossarm braces, insulators, insulator pins, conductors, rotten or otherwise weak crossarms or on attachments that are being moved. When it is necessary to attach to a crossarm, the safety strap shall never be placed beyond the outside crossarm attachment. It shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.

- C.4.20** Employees shall not trust their weight to guy wires, pins, braces, conductors or other such equipment that might prove unstable.
  - C.4.21** When two or more employees are to work on the same pole at the same time, each individual shall reach the working position before the next leaves the ground. Only one may unhook a safety strap at a time. They shall descend the pole one at a time.
- #### **C.5 Working Live-Line Tools**
- C.5.1** Planned work with live-line tools shall not be started during unfavorable weather.
  - C.5.2** Only tools approved by the company shall be used in live-line maintenance. All live-line tools shall be made of fiberglass and shall be visually inspected and wiped with cloth before being used. Any tools with possible defects shall be removed from service.
  - C.5.3** Before work with live-line maintenance tools is begun, the dispatcher or person having jurisdiction shall be notified. If, during live-line tool work, an interruption of service occurs, the dispatcher or other person having jurisdiction shall be notified immediately.
  - C.5.4** The automatic reclosing feature of circuit interrupting devices shall be made inoperative before work begins.
  - C.5.5** Lines of #6 copper, #6 ACSR and #8A copperweld or smaller shall not be worked with live-line sticks.
  - C.5.6** A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.
  - C.5.7** Positive control shall be maintained during the movement of any conductor. Under no circumstances shall an employee depend on another employee to hold an energized conductor clear of said employee.
  - C.5.8** While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.
  - C.5.9** Live-line tools shall never be laid directly on the ground or against sharp objects such as barbed-wire fences. Special tool holders or tarpaulins shall be used for this purpose.
  - C.5.10** All live-line tools, when not in use, shall be kept in canvas bags or weatherproof boxes provided for that purpose; these containers shall be stored in a dry — and, if possible, warm — place.
  - C.5.11** Live-line tools, including the extendo sticks, are used as primary protection and shall be removed from service every two years for examination, cleaning, repair if needed, service and testing.

## C.6 Working On De-energized Lines and Equipment

- C.6.1 All conductors and equipment shall be treated as energized until tested with an approved voltage detector to be de-energized and grounded.
- C.6.2 *New Construction:* New lines or equipment may be considered de-energized and worked as such where:
  - a. the lines or equipment are grounded; or
  - b. the hazard of induced voltages is not present and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment (see *Five-Foot Rule*, C.3.5.)
- C.6.3 Bare communication conductors on power poles or structures shall be treated as energized lines or ground unless protected by insulating materials.

## C.7 Grounding

**Note:** See the "LG&E/KU Transmission Protective Temporary Grounding Procedures" to determine ground sizes. This document can be found at <http://intranet1.lgeenergy.com/corpha&s/oshaprograms.htm>, on the LG&E and KU Corporate Health and Safety intranet, under the 'Programs' section.

- C.7.1 Electrical equipment and conductors shall always be considered as energized unless they are positively proven by approved methods to be de-energized and properly grounded. ***If it isn't grounded, it isn't dead.***
- C.7.2 Proper grounding procedures shall be followed when grounding a distribution or transmission line in preparation for working the line without insulated tools and rubber gloves and sleeves. Thoroughly plan and review the grounding requirements of the work to be performed.
- C.7.3 Protective grounding may be accomplished utilizing one of two methods, depending on the physical requirements of the work location. The two methods are:
  - a. **Equipotential Zone (Single-Point Grounding)** — Generally includes one conductor ground set in conjunction with a personal protective jumper. **Note:** LG&E and KU's preferred method of grounding.
  - b. **Bracket Grounding** — Generally includes two conductor ground sets, one on either side of the work area, with all sources of backfeed between the ground sets eliminated.
- C.7.4 All lockout/tagout and appropriate switching procedures shall be followed before grounding.  
**Refer to company construction standards or safety procedures manual for approved grounding procedures and equipment.**

## C.8 Deleted

## C.9 Fuses

- C.9.1 Class 2 rubber gloves and sleeves shall be worn while opening, closing, removing or replacing hot line clamps, fuses or fuse doors on cutouts even when using an approved switch stick (except when using an approved, tested extendo stick from the ground). Approved eye protection shall also be used during these procedures.

## C.10 Rope (Synthetic Fiber and Manila)

- C.10.1 A rope shall not be overloaded or dragged over rough or sharp objects.
- C.10.2 Short bends over sharp-edged surfaces should be avoided.
- C.10.3 Kinks shall be removed before any strain is put on a rope.
- C.10.4 When not in use, ropes shall be dried and stored properly and kept free from mechanical damage, excessive heat and dryness.
- C.10.5 The outward appearance of rope shall not be accepted as proof of quality or strength.
- C.10.6 Ropes shall be examined regularly for cuts, worn spots, burns and rot. The rope shall be untwisted at various places and inspected for poor fiber and dry rot.
- C.10.7 Safe loads, as specified by the manufacturer, shall not be exceeded. Ropes used for hoisting heavy equipment such as transformers shall be rated for the work being performed.
- C.10.8 Eyes and splices shall be made in accordance with the instructions given by the rope manufacturer.
- C.10.9 Ropes used for energized work must be maintained in a safe, clean, dry condition. An approved hot line tool link stick between the conductor and the rope shall be used.
- C.10.10 Handlines shall:
  - a. Be a minimum of one half inch.
  - b. Be maintained and used so they are safe for pole-top rescue.
  - c. Be used on poles to raise or lower materials and equipment except those heavy enough to require the use of blocks, bull lines or winch lines. Generally, materials or equipment weighing 75 pounds or less should be handled with a handline. Do not subject rope to shock loading.
  - d. Be made up of a three-inch, single-sheave block with a hook equipped with a snap and at least a half-inch sling. The half-inch rope handline shall have a handline snap on one end and a ring or a handline hook on the other.
- C.10.11 A minimum 3/8-inch dropline or throw line may be used instead of a handline for service work on a ladder at a building or for transmission climbing inspections.

## **C.11 Telescopic Switch Sticks**

- C.11.1** Heavy duty telescopic switch sticks and all other sticks used for primary protection shall be tested and labeled with the test date every two years.
- C.11.2** Telescopic sticks are to be used only by persons wearing a hard hat, proper eye protection, approved clothing and leather gloves if the stick has been tested and labeled. Class 2 rubber gloves and sleeves shall be worn when using the stick in inclement weather, and if the stick has not been tested or if the test date has expired.  
***Note:** Eliminating the use of gloves and sleeves does not apply in distribution or transmission substations.*
- C.11.3** Telescopic sticks are not to be used to lower or raise the doors or fuse barrels of cutouts through congested areas, or when the wind velocity is sufficient to render it awkward or impossible to control.
- C.11.4** Telescopic sticks are not to be used by persons standing on a ladder or standing on or in a vehicle.
- C.11.5** Telescopic sticks are not to be used unless clean and in good operating condition, and should be carried and stored in an approved case to prevent physical damage.
- C.11.6** Telescopic sticks, other than the heavy-duty type, shall not be used in distribution or transmission substations for operating disconnects or power fuses, and shall not be used on lines or equipment rated over 35 KV phase-to-phase.

## **C.12 Pole Hauling and Temporary Storage**

- C.12.1** The trailing end of a load of poles shall be marked by a red flag during the day, and by an amber flashing light at night. As an additional precaution, warning flags or lights may be placed in the center of long loads. An employee shall be used for flagging when necessary.
- C.12.2** The wheels of the transporting vehicle shall be chocked and securely braked prior to loading.
- C.12.3** Poles loaded on a truck or trailer shall be securely fastened in at least two places.
- C.12.4** Employees shall not ride on pole dollies or trailers.
- C.12.5** When a load of poles is within working distance of the ground, load binders shall be installed so that they can and will be operated by employees while standing on the ground.
- C.12.6** Employees shall not remain on a pole pile while poles are being hoisted.
- C.12.7** Poles shall be placed or blocked so they will not roll.
- C.12.8** If it becomes necessary to store poles at the location where they

are to be set, they should be placed so that they will not interfere with traffic. If poles are left near streets, highways or walkways overnight where they create a hazard, they shall be safeguarded by amber lights or well-lighted warning signs.

## **C.13 Setting and Removing Poles**

- C.13.1** While setting or removing poles between or near conductors energized above 600 volts:
  - a.** If safe clearances cannot be maintained, the conductors shall be de-energized, covered with protective devices, or spread apart — or a pole guard shall be used to minimize accidental contact.
  - b.** Employees handling the butt of the pole shall wear Class 2 rubber gloves and sleeves whether or not cant hooks, peaveys or slings are used.
  - c.** Until a pole is positively secured from moving against an energized conductor, no one shall step on or off the truck, nor shall an employee standing on the ground touch any part of the truck without using Class 2 rubber gloves and sleeves.
  - d.** Ground wires shall not be attached on the pole higher than 10 feet from the ground.
- C.13.2** Employees engaged in handling or working on poles shall wear suitable gloves and a long-sleeve shirt with the sleeves rolled down and cuffs buttoned.
- C.13.3** All persons not engaged in pole-setting operations shall keep out of the work area.
- C.13.4** Employees shall not stand or pass under a suspended load. Employees shall not stand adjacent to or over or under a loaded winch line.
- C.13.5** Hoisting equipment operators shall accept signals only from the employee specifically designated. The operator shall obey a stop signal from anyone.
- C.13.6** No one shall be on a gin pole when it is being used to raise another pole.
- C.13.7** When pikes are used to hold poles in place while holes are being backfilled, they shall be firmly secured until the backfill is sufficient to hold. When a pole is being canted or hooked, the pikes shall be held.
- C.13.8** If any holes are left unfilled at the end of the work period, they shall be protected with substantial coverings.

## **C.14 Hoisting Cables — Conductive Materials**

- C.14.1** Wire rope and other conductive materials shall not be used to raise transformers, poles or any other equipment or materials near energized lines, except:

- a. When the wire rope is rigged a sufficient distance below all energized wires to prevent the possibility of electrical contact between the energized wires and the wire rope or conductive material being raised.
- b. When the wire rope and any conductive material being raised are adequately protected.
- c. When the energized line and equipment are adequately protected.

**C.14.2** Positive control of wire rope shall be maintained at all times.

**C.14.3** Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged.

**C.14.4** Metallic slings (chain or cable) shall not be used near energized equipment. Whenever possible, chain slings should not be used for hoisting purposes — but if they are used for lifting, they shall be tagged with proper information.

**C.14.5** Synthetic hoisting/pulling lines and rope shall not be considered as non-conductive unless properly maintained to preserve their insulating qualities.

### **C.15 Stringing Adjacent to Energized Lines**

**C.15.1** Prior to stringing parallel to an existing energized transmission line, a competent determination shall be made by the qualified person in charge to ascertain whether dangerous induced-voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that dangerous induced voltage may exist, the following provisions shall be followed.

- a. When stringing adjacent to energized lines, the tension stringing method, or any other methods that preclude unintentional contact between the lines being pulled, shall be used.
- b. All pulling and tensioning equipment shall be isolated, insulated or effectively grounded.
- c. A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor and overhead ground conductor during stringing operations.
- d. During stringing operations, each bare conductor and overhead ground conductor shall be grounded at the first tower adjacent to both the tensioning and pulling setup, and in increments so that no point is more than two miles from the ground.
- e. The grounds shall be left in place until the conductor installation is completed.
- f. Such grounds shall be removed as the last phase of aerial clean-up.
- g. Except for moving-type grounds, the grounds shall be placed and removed with an approved shotgun stick or switch stick.

- h. Conductors and overhead ground conductors shall be grounded at all deadend or catch-off points.
- i. A ground shall be located at each side and within 10 feet of working areas where conductors or overhead ground conductors are being spliced at ground level. The two ends to be spliced shall be bonded to each other.
- j. All conductors and overhead ground conductors shall be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.
- k. Work on deadend towers shall require grounding on all de-energized lines.
- l. Grounds may be removed as soon as the work is completed, provided that the line is not left open-circuited at the isolated tower at which work is being completed.
- m. When performing work from the structures, clipping crews and all others working on conductors or overhead ground conductors shall be protected by individual grounds installed at every work location.

### **C.16 Stringing or Removing Across Energized Conductors**

- C.16.1** Prior to stringing operations, a job briefing shall be held, setting forth the plan of operation and specifying the type of equipment to be used, grounding devices, procedures to be followed, crossover methods to be followed and clearance authorizations required.
- C.16.2** Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced-voltage buildup, to further protect the employee from the hazards of the conductor, the conductor being installed or removed shall be grounded and provisions made to insulate or isolate the employee.
- C.16.3** If the existing line is de-energized, proper clearance authorization shall be secured, and the line grounded on both sides of the crossover, or the line being strung or removed shall be considered and worked as energized.
- C.16.4** When crossing over energized conductors in excess of 300 volts, rope nets or guard structures shall be installed, unless provision is made to isolate or insulate the worker or the energized conductor. Where practical, the automatic reclosing feature of the circuit interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.
- C.16.5** Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tielines, or other means to prevent accidental contact with energized circuits.

**C.16.6** A transmission crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on bare conductors, clipping and tying crews shall work between grounds at all times. The grounds shall remain intact until the conductors are clipped-in, except on deadend structures.

### C.17 **Working on Distribution Transformers**

- C.17.1** The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and the secondary leads have been disconnected, or it has been determined that the secondary circuit to which it is attached is not energized from other transformers or other sources.
- C.17.2** The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary unless they are adequately grounded.
- C.17.3** Employees shall not stand on, or otherwise contact, transformer cases while working on or near energized circuits.

### C. 18 **Capacitors**

See Section F.8.

**Table C-1**

AC Live-Line Work Minimum Approach Distance and Clear Hot Stick Distance				
Voltage in Kilovolts Phase-to-Phase	Phase-to-Ground Exposure		Phase-to-Phase Exposure	
	Feet-Inches	Meters	Feet-Inches	Meters
0 to 0.3	Avoid Contact		Avoid Contact	
0.31 to 0.75	1'1"	0.33	1'1"	0.33
0.751 to 5.0	2'1"	0.63	2'1"	0.63
5.1 to 15.0	2'2"	0.652	2'3"	0.684
15.1 to 36.0	2'7"	0.778	3'	0.904
36.1 to 46.0	2'10"	0.852	3'4"	0.999
46.1 to 72.5	3'5"	1.02	4'1"	1.23

**Table C-2**

DC Live-Line Work Minimum Approach Distance with Over-Voltage Factor					
Max. Anticipated Per-Unit Transient Over-Voltage	Distance in Feet-Inches				
	Maximum Line-to-Ground Voltage in Kilovolts				
	250	400	500	600	750
1.5 or lower	3'8"	5'3"	6'9"	8'7"	11'10"
1.6	3'10"	5'7"	7'4"	9'5"	13'1"
1.7	4'1"	6'0"	7'11"	10'3"	14'4"
1.8	4'3"	6'5"	8'7"	11'2"	15'9"

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient over-voltage has been determined by engineering analysis and has been supplied by the employer. If, however, the transient over-voltage factor is not known, a factor of 1.8 shall be assumed.

Note 2: The distances specified in this table are the air, bare-hand and live-line tool distances.

**Table C-3**

AC Live-Line Work Minimum Approach Distance with Transient Over-Voltage				
Voltage (kV)	Phase-to-Ground Exposure		Phase-to-Phase Exposure	
	Feet-Inches	Meters	Feet-Inches	Meters
72.6 to 121.0	3'8"	1.10	4'11"	1.48
121.1 to 145.0	4'2"	1.26	5'8"	1.71
145.1 to 169.0	4'8"	1.41	6'8"	2.02
169.1 to 242.0	6'5"	1.95	10'7"	3.22
242.1 to 362.0	11'0"	3.33	19'0"	5.78
362.1 to 420.0	13'9"	4.17	23'5"	7.13
420.1 to 550.0	16'6"	5.00	28'4"	8.64
550.1 to 800.0	22'6"	6.84	39'2"	11.93

For voltages over 72.5 kV, employees/contractors shall utilize the minimum approach distances in Table C-3 **or** contact engineering for calculated distances.

**Transient Overvoltage**

- Selected 3.5 for 72.6 to 420.0 voltage based on R-9 table in OSHA 1910.269
- Selected 3.0 for 420.1 to 550.0 voltage based on R-9 table in OSHA 1910.269
- Selected 2.5 for 550.1 to 800.0 voltage based on R-9 table in OSHA 1910.269





## **D. Distribution**

### **D.1 *Electrical Work Practices***

- D.1.1** Before work is commenced, a job briefing (tailgate conference) shall be held with all employees to orient each employee as to:
- a. The hazards associated with the job.
  - b. The work procedures involved.
  - c. Any special precautions to be taken.
  - d. All energy source controls.
  - e. Personal protective equipment required.
- The job briefing shall be documented and a copy maintained for a minimum of 30 calendar days.
- D.1.2** Electrical equipment and lines shall always be considered as energized unless they are positively known to be dead and grounded. Before work is started on energized equipment or circuits, a preliminary inspection (or test) shall be made to determine existing conditions.
- D.1.3** When employees are working and find a condition that they cannot handle safely, they shall call for assistance.
- D.1.4** Only qualified employees and trainees working under their direct supervision may work on or with exposed energized lines or parts of equipment operating at 50 volts or more, and must be familiar with the minimum working clearance and approach distances.
- (See Table D-1 — Minimum Approach Distance.)
- D.1.5** Two employees shall not contact separate energized primary phases while working from the same pole, structure or aerial lift.
- D.1.6** At least two employees shall be present while the following types of work are being performed:
- a. Installation, repair or removal of lines energized at more than 600 volts.
  - b. Installation, repair or removal of de-energized lines or equipment such as transformers, capacitors and regulators, if an employee is exposed to contact with other parts energized at more than 600 volts.
  - c. Work involving the use of mechanical equipment, other than insulated lifts, near parts energized at more than 600 volts.
  - d. Any other work that exposes an employee to electrical hazards greater than or equal to those listed above.
- D.1.7** At least two employees do not need to be present in the following operations.
- a. Routine switching of circuits.
  - b. Work performed with insulated switch sticks or live-line tools,

if the employee is positioned so that he/she is not within reach of — or otherwise exposed to — energized parts.

- c. Emergency repairs necessary to safeguard the general public, as long as approved tools and proper protective equipment are used.

- D.1.8** No employee may approach or take any conductive object without an insulated handle closer to exposed energized parts than the clearances set forth in Tables D-1, D-2 and D-3, unless:
  - a. The employee is insulated from the energized part.
  - b. The energized part is insulated from the employee and any other conductive object at a different potential.
  - c. The employee is insulated from any other conductive object, as during live-line work.
- D.1.9** Employees shall avoid working on circuits or equipment from such a position that a shock or slip might bring his/her body toward exposed energized parts. Whenever practicable, work on energized lines and equipment shall be performed from below.
- D.1.10** In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, employees shall first attach the wire to the de-energized part. When disconnecting, employees shall remove the source end first. Loose conductors shall be kept away from exposed energized parts.
- D.1.11** Employees shall immediately report to the nearest supervisor any defective line, apparatus, tool or other condition which, in their judgment, may be dangerous — either to persons or property — or likely to interrupt or delay service.
- D.1.12** Employees shall use extreme caution when removing or replacing fuses which are energized on either side. Cartridge fuses shall be removed and replaced with approved fuse pullers, fuse tongs or rubber gloves. Screwdrivers, pliers, etc., shall not be used for this purpose.
- D.1.13** Extreme caution shall be exercised when handling common-neutral conductors, as high voltage may be encountered. Whenever needed, temporary jumpers of adequate size shall be properly connected and secured before energized equipment grounds and energized circuit neutrals are opened.
- D.1.14** Employees fighting fires near exposed energized electrical parts shall use fire extinguishers or materials which are suitable for this purpose. If this is not possible, the adjacent and affected equipment shall first be de-energized.
- D.1.15** When employees are performing work on — or associated with — exposed lines or equipment energized at 50 volts or more

(except as noted in D.1.7), at least two persons trained in first aid and cardiopulmonary resuscitation (CPR) shall be available. (Only one trained person needs to be available if all new employees on the job are to be trained in first aid and CPR within three months of their hiring dates.)

## **D.2 *Flexible and Rigid Insulated Protective Equipment (Rubber, Fiber, Synthetics, etc.)***

- D.2.1** Employees shall not touch or work on any energized lines or equipment except when wearing protective equipment for the voltage to be contacted.
- D.2.2** Whenever any part of an employee's body may touch a conductor, or if an employee is to handle a conductive device or tool within the minimum working and clear hot-stick distances, he/she shall cover, with insulating protective equipment, the conductor, conductive device or tool within reach of any part of the body except that part of the conductor or equipment on which he/she is working.
- D.2.3** When working on an energized line or apparatus — including the installation or removal of protective devices — work should be done from below if possible.
- D.2.4** In applying insulating protective equipment, employees shall always protect the nearest and lowest wires first, providing protection as progress is made. In removing insulating protective equipment, the reverse order shall be maintained.
- D.2.5** Flexible blankets should not be used on the ground without protecting them from physical damage and moisture by means of a tarpaulin canvas or protective mat.
- D.2.6** Line hoses, hoods, blankets, line guards, etc., shall be visually inspected before each use. Hoses, hoods, blankets and other cover-up materials shall be maintained in a clean safe condition.
- D.2.7** All insulating protective equipment shall be thoroughly cleaned (with approved cleaning agents) periodically, as needed, to remove foreign substances, and shall be wiped clean of oil, grease or other damaging substances as soon as practicable.
- D.2.8** Flexible protective devices shall be stored in special compartments, on trucks and elsewhere, where they will not be subjected to damage from tools, sunlight or other equipment.  
***There shall be a sufficient quantity of insulating protective devices as may be required by the person or crew for the job being done.***
- D.2.9** Suitable lines and tool bags shall be used for raising and lowering materials, tools and protective equipment. Employees shall not throw anything from a pole or structure or permit anything to be thrown to them.



- D.2.10** If a job requires an employee to stand on a rubber protective blanket, it shall not be used again until tested by the Glove Lab.
- D.2.11** Bare communication conductors shall be treated as energized or grounded, and shall be protected accordingly.

### **D.3 Use and Care of Rubber Goods**

- D.3.1** Only qualified employees, or those under the continuous supervision of a qualified employee, shall work on energized lines or equipment.
- D.3.2** Employees shall wear Class 0 rubber gloves with leather protectors when working on lines or equipment energized at 50 to 600 volts. Low-voltage gloves are required personal protective equipment when:
  - a.** Working in an energized meter base or panel, making contact with the energized terminal or parts.
  - b.** Working with bottom-connect-type meters.
  - c.** Removing or installing energized three-phase, self-contained meters. **Note:** *Face shields and balaclava are required additional personal protection for 480-volt meter change-outs. Additional PPE may be required, contact supervisor or safety specialist before energized work.*
  - d.** Working on the test block for PT and CT metering installations.
  - e.** Working energized services and secondary.
- D.3.3** Low-voltage gloves are not required personal protective equipment when:
  - a.** Working a turn-on or turn-off and changing out a meter (involving single-phase, self-contained socket-type meters).
  - b.** Relamping street lights.
  - c.** Making ampere and voltage checks with approved test equipment on circuits or equipment energized at 300 volts or less, provided no physical contact is being made with energized parts.
- D.3.4** Employees shall wear Class 2 rubber gloves with leather protectors and Class 2 rubber sleeves when working on lines or equipment energized at 600 to 15,000 volts.
- D.3.5** **Five-Foot Rule:** When working on lines or equipment which are energized or may become energized at voltages from 600 to 15,000 volts, Class 2 rubber gloves and sleeves shall be used. They shall be put on before the employee comes within five feet of such lines or equipment, regardless of whether or not such lines or equipment are covered by insulating protective equipment. They shall not be removed for any reason until the employee is entirely out of the five-foot clearance of such circuits or apparatus. The Five-Foot Rule takes precedence over the clearance Table D-1 for voltages up to 15KV.

**Exception:** *In certain applications, such as installing or removing transformers on straight-line poles (single- or three-phase), there is an exception to the Five-Foot Rule. After the circuits have been adequately covered or guarded with insulating protective equipment, the qualified employee in charge may allow employees to remove rubber gloves and sleeves outside of the two-foot-one-inch minimum approach distance referenced in Table D-1 for voltages up to 15KV. Under no circumstances can the person in charge be the person doing the work.*

- D.3.6** Class 2 rubber gloves with leather protectors and Class 2 rubber sleeves shall be worn when:
  - a.** Working on — or within five feet of — any electrical equipment or metal surfaces (cross-arms, cross-arm braces or transformer cases, etc.) which are not effectively grounded, and which may be — or may become — energized from 600 to 15,000 volts.
  - b.** Working during wet or stormy weather within five feet of any conductor or equipment which may become energized at any voltage.
  - c.** Required by supervisor.
  - d.** Operating manually controlled air-break switches. The handle and other parts of air-break switches shall not be contacted with any part of the body except the parts protected by rubber gloves and sleeves.
  - e.** Opening, closing, removing or replacing hot line clamps, fuses or fuse door on cutouts, even when using an approved switch stick. **Exception to the previous statement:** *A properly maintained, heavy-duty fiberglass extendo stick that has been tested and labeled with a test date may be used while standing on the ground without rubber gloves and sleeves, except in inclement weather.*
  - f.** Making tests to determine if lines are energized and applying or removing grounding devices.
  - g.** Working on or near series street lighting circuits even though they are disconnected from their source.
  - h.** Repairing series fixtures or attachments with the circuit exposed to energized conductors. One exception would be if the fixtures are disconnected from the line.
  - i.** Pulling in wire or handling other conductive materials near circuits, apparatus or equipment which is or may become energized.
  - j.** Working on or near telephone or other circuits which are subject to induced voltages from energized high-voltage circuits, unless the circuits to be worked are adequately grounded.
  - k.** Making the initial voltage check on new transformer installations.

- I. Connecting driven grounds to neutrals or static wires when circuits are energized.
- m. Using any type of switch stick in a distribution or transmission substation.

*See rules for underground residential distribution, Section E.*

- D.3.7** Rubber gloves, sleeves and blankets shall be subjected to an approved electrical test at intervals not to exceed 90 days.
- D.3.8** Rubber gloves and sleeves shall be inspected daily for corona cracks or other damage and shall be given an air test at least once a day while in use. This should be done at the beginning of the work period and at any other time when their condition is in doubt. They shall be visually checked before each use.
- D.3.9** Rubber gloves and sleeves shall never be worn inside out or without leather protectors. Rubber gloves or sleeves shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of damage.
- D.3.10** Leather protectors shall not be worn except when in use over Class 2 or Class 0 rubber gloves.
- D.3.11** Rubber gloves and sleeves, when not in use, shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored, nor shall other objects be placed upon them.
- D.3.12** Rubber gloves shall be stored in a glove bag with the cuffs down to permit drainage and better ventilation, and reduce the possibility of damage due to objects falling into the glove.
- D.3.13** When working with rubber protective equipment on energized circuits or apparatus where the voltage between any two conductors is more than 600 volts, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment.
  - a. Class 2 rubber gloves and sleeves shall be used.
  - b. Employees shall not make physical contact with protective devices installed on energized primary conductors with other than their rubber gloves and sleeves.
  - c. Employees shall be isolated from all grounds (wooden poles shall be considered as grounds), by using approved supplementary insulation such as aerial baskets, insulated platforms, hook ladders or other approved means of isolation.
- D3.14** When it is necessary to pass through or near circuits energized at 600 volts and above in order to reach a working area above (for example, to work on transmission circuits underbuilt by these lower-voltage circuits) they must be tied out with live-line

maintenance tools or covered with approved protective equipment (rubber or fiber). Approved protective equipment must be properly installed with live-line maintenance tools or from an insulated platform (aerial basket, insulated platform or hook ladder).

- D.3.15** If the circuits to be passed through are energized at voltages above 15,000 volts between phases, they must be tied out with live-line maintenance tools.

## **D.4 Personal Climbing Equipment**

### **Body Belts**

- D.4.1** Only approved belts and approved fall protection equipment (FPE) shall be used.
- D.4.2** All equipment shall be inspected before each use. Any found damaged or excessively worn shall not be used.
- D.4.3** Climbing belts shall comply with the standards described by KOSHA 1926.959, which states that when tool loops are placed on a line technician's body belt, the maximum shall be no greater than four. Tool loops on a body belt shall be placed on the belt in such a way as to allow four inches in the back center of the belt to remain unobstructed by loops or other attachments (measuring from D-ring to D-ring) so that in case of a fall, the chance of injury will be lessened.
- D.4.4** FPE having double-locking snap hooks shall be worn by employees working at elevated locations on poles, ladders, towers, or other structures except where such use creates a greater hazard to the safety of the employee — in which case, other safeguards shall be used.
- D.4.5** Before an employee trusts his/her weight to a climbing belt or a similar device, a determination shall be made that the double-locking snaps are properly engaged, and that the employee is secure on the structure.
- D.4.6** Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belts. Leather or other non-conducting material shall be used for this purpose.

### **Climbers**

- D.4.7** Climbers shall be inspected before each use. Damaged or excessively worn straps, or missing or broken screws, shall be replaced before climbers are used.
- D.4.8** Gaffs shall be kept within safe length limits (1-1/4 inches, minimum), properly shaped, sharp and free of burrs. Gaffs shall be tested for wear and shape by using a gauge recommended by the manufacturer.
- D.4.9** Pole gaffs shall not be used for tree climbing.

- D.4.10** Employees shall not wear their climbers while driving, riding in vehicles, working on the ground or working on ladders (except hook ladders). Climbers shall be put on and removed as close to the pole as safety permits.
- D.4.11** When climbers are stored in the truck or tool room, the sharp gaff points shall be covered with suitable gaff guards so they will not damage other equipment or cause personal injury.

#### **Body Harnesses**

- D.4.12** A harness attached to a lanyard with a double-locking snap hook shall be worn while working from or riding in an aerial device. Lanyards shall be made of nylon and equipped with a double locking snap, and shall be no longer than six feet.

#### **Working on Poles**

- D.4.13** Before any pole is climbed, employees shall first:
- a. Inspect all equipment before each use. If any equipment is found to be damaged or worn, it shall be repaired or replaced.
  - b. Inspect the pole to determine if it is safe to climb and that it is capable of sustaining the additional or unbalanced stresses to which it will be subjected.
- D.4.14** Poles that are determined to be unsafe to climb shall be made safe by guying, bracing or other adequate means. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to it in lieu of guying.
- D.4.15** *Deleted*
- D.4.16** Fall-protection equipment shall be used in accordance with the manufacturer's direction when ascending or descending.
- D.4.17** A handline shall be taken aloft whether climbing or using an aerial device.
- D.4.18** Employees shall not climb or work on an elevated pole or structure without first securing themselves with FPE.
- D.4.19** The safety strap shall not be put around a pole above the uppermost pole attachment, except where the pole top or attachment is above eye level. It shall not be used on pole steps, crossarm braces, insulators, insulator pins, conductors, rotten or otherwise weak crossarms or on attachments that are being moved. When it is necessary to attach to a crossarm, the safety strap shall never be placed beyond the outside crossarm attachment. It shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.
- D.4.20** Employees shall not trust their weight to guy wires, pins, braces,

- conductors, or other such equipment that might prove unstable.
- D.4.21** When two or more employees are to work on the same pole at the same time, each individual shall reach the working position before the next leaves the ground. Only one may unhook a safety strap at a time. They shall descend the pole one at a time.

#### **D.5 Working Live-Line Tools**

- D.5.1** Planned work with live-line tools shall not be started during unfavorable weather.
- D.5.2** Only tools approved by the company shall be used in live-line maintenance. All live-line tools shall be made of fiberglass and shall be visually inspected and wiped with cloth before being used. Any tools with possible defects shall be removed from service.
- D.5.3** Before work with live-line maintenance tools is begun, the dispatcher or person having jurisdiction shall be notified. If, during live-line tool work, an interruption of service occurs, the dispatcher or other person having jurisdiction shall be notified immediately.
- D.5.4** The automatic reclosing feature of circuit interrupting devices shall be made inoperative before work begins.
- D.5.5** Lines of #6 copper, #6 ACSR, and #8A copperweld or smaller shall not be worked with live-line sticks.
- D.5.6** A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.
- D.5.7** Positive control shall be maintained during the movement of any conductor. Under no circumstances shall an employee depend on another employee to hold an energized conductor clear of said employee.
- D.5.8** While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.
- D.5.9** Live-line tools shall never be laid directly on the ground or against sharp objects such as barbed-wire fences. Special tool holders or tarpaulins shall be used for this purpose.
- D.5.10** All live-line tools, when not in use, shall be kept in canvas bags or weatherproof boxes provided for that purpose; these containers shall be stored in a dry — and, if possible, warm — place.
- D.5.11** Live-line tools, including the extendo sticks, are used as primary protection and shall be removed from service every two years for examination, cleaning, repair if needed, service and testing.

## D.6 Working On De-energized Lines and Equipment

- D.6.1** All conductors and equipment shall be treated as energized until tested with an approved voltage detector to be de-energized and grounded.
- D.6.2** *New Construction:* New lines or equipment may be considered de-energized and worked as such where:
- the lines or equipment are grounded; or
  - the hazard of induced voltages is not present and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment (see *Five-Foot Rule*, D.3.5).
- D.6.3** Bare communication conductors on power poles or structures shall be treated as energized lines or ground unless protected by insulating materials.

## D.7 Grounding

*See grounding procedures and requirements.*

- D.7.1** Electrical equipment and conductors shall always be considered as energized unless they are positively proven by approved methods to be de-energized and properly grounded. ***If it isn't grounded, it isn't dead.***
- D.7.2** Proper grounding procedures shall be followed when grounding a distribution or transmission line in preparation for working the line without insulated tools and rubber gloves and sleeves. Thoroughly plan and review the grounding requirements of the work to be performed.
- D.7.3** Protective grounding may be accomplished utilizing one of two methods, depending on the physical requirements of the work location. The two methods are:
- Equipotential Zone (Single-Point Grounding)** — Generally includes one conductor ground set in conjunction with a personal protective jumper. **Note:** *LG&E and KU's preferred method of grounding.*
  - Bracket Grounding** — Generally includes two conductor ground sets, one on either side of the work area, with all sources of backfeed between the ground sets eliminated.
- D.7.4** All lockout/tagout and appropriate switching procedures shall be followed before grounding.
- Refer to company construction standards or safety procedures manual for approved grounding procedures and equipment.***

## D.8 Deleted

## D.9 Fuses

- D.9.1** Class 2 rubber gloves and sleeves shall be worn while opening, closing, removing or replacing hot line clamps, fuses or fuse doors on cutouts even when using an approved switch stick (except when using an approved, tested extendo stick from the ground). Approved eye protection shall also be used during these procedures.

## D.10 Rope (Synthetic Fiber and Manila)

- D.10.1** A rope shall not be overloaded or dragged over rough or sharp objects.
- D.10.2** Short bends over sharp-edged surfaces should be avoided.
- D.10.3** Kinks shall be removed before any strain is put on a rope.
- D.10.4** When not in use, ropes shall be dried and stored properly and kept free from mechanical damage, excessive heat and dryness.
- D.10.5** The outward appearance of rope shall not be accepted as proof of quality or strength.
- D.10.6** Ropes shall be examined regularly for cuts, worn spots, burns and rot. The rope shall be untwisted at various places and inspected for poor fiber and dry rot.
- D.10.7** Safe loads, as specified by the manufacturer, shall not be exceeded. Ropes used for hoisting heavy equipment such as transformers shall be rated for the work being performed.
- D.10.8** Eyes and splices shall be made in accordance with the instructions given by the rope manufacturer.
- D.10.9** Ropes used for energized work must be maintained in a safe, clean, dry condition. An approved hot line tool link stick between the conductor and the rope shall be used.
- D.10.10** Handlines shall:
- Be a minimum of one half inch.
  - Be maintained and used so they are safe for pole-top rescue.
  - Be used to raise or lower materials and equipment on poles except those heavy enough to require the use of blocks, bull lines or winch lines. Generally, materials or equipment weighing 75 pounds or less should be handled with a handline. Do not subject rope to shock loading.
  - Be made up of a three-inch, single-sheave block with a hook equipped with a snap and at least a half-inch sling. The half-inch rope handline shall have a handline snap on one end and a ring or a handline hook on the other.
- D.10.11** A minimum 3/8-inch dropline or throw line may be used instead of a handline for service work on a ladder at a building or for transmission climbing inspections.



## **D.11 Switch Sticks**

- D.11.1** Heavy duty telescopic switch sticks and all other sticks used for primary protection shall be tested and labeled with the test date every two years.
- D.11.2** Telescopic sticks are to be used only by persons wearing a hard hat, proper eye protection, approved clothing and leather gloves if the stick has been tested and labeled. Class 2 rubber gloves and sleeves shall be worn when using the stick in inclement weather, and if the stick has not been tested or if the test date has expired.  
***Note:** Eliminating the use of gloves and sleeves does not apply in distribution or transmission substations.*
- D.11.3** Telescopic sticks are not to be used to lower or raise the doors or fuse barrels of cutouts through congested areas, or when the wind velocity is sufficient to render it awkward or impossible to control.
- D.11.4** Telescopic sticks are not to be used by persons standing on a ladder or standing on or in a vehicle.
- D.11.5** Telescopic sticks are not to be used unless clean and in good operating condition, and should be carried and stored in an approved case to prevent physical damage.
- D.11.6** Telescopic sticks, other than the heavy-duty type, shall not be used in distribution or transmission substations for operating disconnects or power fuses, and shall not be used on lines or equipment rated over 35 KV phase-to-phase.
- D.11.7** Switch sticks such as shotgun and small telescopic sticks shall be a minimum length of eight feet.

## **D.12 Pole Hauling and Temporary Storage**

- D.12.1** The trailing end of a load of poles shall be marked by a red flag during the day, and by an amber flashing light at night. As an additional precaution, warning flags or lights may be placed in the center of long loads. An employee shall be used for flagging when necessary.
- D.12.2** The wheels of the transporting vehicle shall be chocked and securely braked prior to loading.
- D.12.3** Poles loaded on a truck or trailer shall be securely fastened in at least two places.
- D.12.4** Employees shall not ride on pole dollies or trailers.
- D.12.5** When a load of poles is within working distance of the ground, load binders shall be installed so that they can and will be operated by employees while standing on the ground.
- D.12.6** Employees shall not remain on a pole pile while poles are being hoisted.

- D.12.7** Poles shall be placed or blocked so they will not roll.
- D.12.8** If it becomes necessary to store poles at the location where they are to be set, they should be placed so that they will not interfere with traffic. If poles are left near streets, highways or walkways overnight where they create a hazard, they shall be safeguarded by amber lights or well-lighted warning signs.

## **D.13 Setting and Removing Poles**

- D.13.1** While setting or removing poles between or near conductors energized above 600 volts:
  - a.** If safe clearances cannot be maintained, the conductors shall be de-energized, covered with protective devices, or spread apart — or a pole guard shall be used to minimize accidental contact.
  - b.** Employees handling the butt of the pole shall wear Class 2 rubber gloves and sleeves whether or not cant hooks, peaveys or slings are used.
  - c.** Until a pole is positively secured from moving against an energized conductor, no one shall step on or off the truck, nor shall an employee standing on the ground touch any part of the truck without using Class 2 rubber gloves and sleeves.
  - d.** Ground wires shall not be attached on the pole higher than 10 feet from the ground.
- D.13.2** Employees engaged in handling or working on poles shall wear suitable gloves and a long-sleeve shirt with the sleeves rolled down and cuffs buttoned.
- D.13.3** All persons not engaged in pole-setting operations shall keep out of the work area.
- D.13.4** Employees shall not stand or pass under a suspended load. Employees shall not stand adjacent to or over or under a loaded winch line.
- D.13.5** Hoisting equipment operators shall accept signals only from the employee specifically designated. The operator shall obey a stop signal from anyone.
- D.13.6** No one shall be on a gin pole when it is being used to raise another pole.
- D.13.7** When pikes are used to hold poles in place while holes are being backfilled, they shall be firmly secured until the backfill is sufficient to hold. When a pole is being canted or hooked, the pikes shall be held.
- D.13.8** If any holes are left unfilled at the end of the work period, they shall be protected with substantial coverings.

## D.14 *Hoisting Cables — Conductive Materials*

- D.14.1** Wire rope and other conductive materials shall not be used to raise transformers, poles or any other equipment or materials near energized lines, except:
- When the wire rope is rigged a sufficient distance below all energized wires to prevent the possibility of electrical contact between the energized wires and the wire rope or conductive material being raised.
  - When the wire rope and any conductive material being raised are adequately protected.
  - When energized line and equipment are adequately protected.
- D.14.2** Positive control of wire rope shall be maintained at all times.
- D.14.3** Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged.
- D.14.4** Metallic slings (chain or cable) shall not be used near energized equipment. Whenever possible, chain slings should not be used for hoisting purposes — but if they are used for lifting, they shall be tagged with proper information.
- D.14.5** Synthetic hoisting/pulling lines and rope shall not be considered as non-conductive unless properly maintained to preserve their insulating qualities.

## D.15 *Stringing Adjacent to Energized Lines*

- D.15.1** Prior to stringing parallel to an existing energized transmission line, a competent determination shall be made by the qualified person in charge to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that dangerous induced voltage may exist, the following provisions shall be followed:
- When stringing adjacent to energized lines, the tension stringing method, or any other methods that preclude unintentional contact between the lines being pulled, shall be used.
  - All pulling and tensioning equipment shall be isolated, insulated or effectively grounded.
  - A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor and overhead ground conductor during stringing operations.
  - During stringing operations, each bare conductor and overhead ground conductor shall be grounded at the first tower adjacent to both the tensioning and pulling setup, and in increments so that no point is more than two miles from the ground.

- The grounds shall be left in place until the conductor installation is completed.
- Such grounds shall be removed as the last phase of aerial clean-up.
- Except for moving-type grounds, the grounds shall be placed and removed with an approved shotgun stick or switch stick.
- Conductors and overhead ground conductors shall be grounded at all deadend or catch-off points.
- A ground shall be located at each side and within 10 feet of working areas where conductors or overhead ground conductors are being spliced at ground level. The two ends to be spliced shall be bonded to each other.
- All conductors and overhead ground conductors shall be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.
- Work on deadend towers shall require grounding on all de-energized lines.
- Grounds may be removed as soon as the work is completed, provided that the line is not left open-circuited at the isolated tower at which work is being completed.
- When performing work from the structures, clipping crews and all others working on conductors or overhead ground conductors shall be protected by individual grounds installed at every work location.

## D.16 *Stringing or Removing Across Energized Conductors*

- D.16.1** Prior to stringing operations, a job briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices, procedures to be followed, crossover methods to be followed and clearance authorizations required.

Table D-1

AC Live-Line Work Minimum Approach Distance and Clear Hot Stick Distance				
Voltage in Kilovolts	Phase-to-Ground Exposure		Phase-to-Phase Exposure	
Phase-to-Phase	Feet-Inches	Meters	Feet-Inches	Meters
0 to 0.3	Avoid Contact		Avoid Contact	
0.31 to 0.75	1'1"	0.33	1'1"	0.33
0.751 to 5.0	2'1"	0.63	2'1"	0.63
5.1 to 15.0	2'2"	0.652	2'3"	0.684
15.1 to 36.0	2'7"	0.778	3'	0.904
36.1 to 46.0	2'10"	0.852	3'4"	0.999
46.1 to 72.5	3'5"	1.02	4'1"	1.23

Table D-2					
DC Live-Line Work Minimum Approach Distance with Over-Voltage Factor					
Max. Anticipated Per-Unit Transient Over-Voltage	Distance in Feet-Inches				
	Maximum Line-to-Ground Voltage in Kilovolts				
	250	400	500	600	750
1.5 or lower	3'8"	5'3"	6'9"	8'7"	11'10"
1.6	3'10"	5'7"	7'4"	9'5"	13'1"
1.7	4'1"	6'0"	7'11"	10'3"	14'4"
1.8	4'3"	6'5"	8'7"	11'2"	15'9"
Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient over-voltage has been determined by engineering analysis and has been supplied by the employer. If, however, the transient over-voltage factor is not known, a factor of 1.8 shall be assumed.					
Note 2: The distances specified in this table are the air, bare-hand and live-line tool distances.					

Table D-3				
AC Live-Line Work Minimum Approach Distance with Transient Over-Voltage				
Voltage (kV)	Phase-to-Ground Exposure		Phase-to-Phase Exposure	
	Feet-Inches	Meters	Feet-Inches	Meters
72.6 to 121.0	3'8"	1.10	4'11"	1.48
121.1 to 145.0	4'2"	1.26	5'8"	1.71
145.1 to 169.0	4'8"	1.41	6'8"	2.02
169.1 to 242.0	6'5"	1.95	10'7"	3.22
242.1 to 362.0	11'0"	3.33	19'0"	5.78
362.1 to 420.0	13'9"	4.17	23'5"	7.13
420.1 to 550.0	16'6"	5.00	28'4"	8.64
550.1 to 800.0	22'6"	6.84	39'2"	11.93

- D.16.2** Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced-voltage buildup, to further protect the employee from the hazards of the conductor, the conductor being installed or removed shall be grounded and provisions made to insulate or isolate the employee.
- D.16.3** If the existing line is de-energized, proper clearance authorization shall be secured, and the line grounded on both sides of the crossover, or the line being strung or removed shall be considered and worked as energized.
- D.16.4** When crossing over energized conductors in excess of 300 volts, rope nets or guard structures shall be installed, unless provision is made to isolate or insulate the worker or the energized conductor. Where practical, the automatic reclosing feature of the circuit interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.

- D.16.5** Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tielines, or other means to prevent accidental contact with energized circuits.
- D.16.6** A transmission crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on bare conductors, clipping and tying crews shall work between grounds at all times. The grounds shall remain intact until the conductors are clipped-in, except on deadend structures.
- D.17** ***Working on Distribution Transformers***
- D.17.1** The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and the secondary leads have been disconnected, or it has been determined that the secondary circuit to which it is attached is not energized from other transformers or other sources.
- D.17.2** The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary unless they are adequately grounded.
- D.17.3** Employees shall not stand on, or otherwise contact, transformer cases while working on or near energized circuit.
- D.18** ***Capacitors***  
*See Section F.8.*

***E. Underground Residential Distribution***



## **E. Underground Residential Distribution**

### **E.1 *URD — General***

- E.1.1** Before a URD transformer enclosure is opened, all unauthorized persons — including the public — shall be required to leave the work area and remain clear of all hazards involved in the work.

### **E.2 *Rubber Glove Use — URD***

- E.2.1** Class 2 rubber gloves and rubber sleeves shall be worn when any UG compartment or enclosure, containing primary of an unknown voltage, is opened.
- E.2.2** Class 2 rubber gloves and sleeves shall be worn when removing animals, vines, weeds, grass or vegetation of any kind that has grown into an energized URD installation, whether the equipment is opened or closed.
- E.2.3** Class 2 rubber gloves and sleeves shall be worn when energized primary cables are moved, handled or protected.
- E.2.4** Class 2 rubber gloves and sleeves shall be worn when covering all primary cable and terminations with proper protective equipment. After all primary cable and terminations are properly protected, Class 0 rubber gloves may be substituted when work is performed on secondaries and services energized at 600 volts or less.
- E.2.5** Class 2 rubber gloves and sleeves shall be worn when working on a primary neutral in an energized primary circuit.

### **E.3 *Opening and Closing Circuits — URD***

- E.3.1** Company switching procedures, including distribution switching tag practices, shall be followed when sectionalizing URD systems.
- E.3.2** When a URD circuit has opened, the route of the circuit shall be patrolled for obvious hazards before the circuit is reclosed.
- E.3.3** Any URD primary circuit shall be de-energized by opening one or more devices. De-energizing shall be done with load-break elbow connectors, load-break fuse cutout at the riser pole, load-break tool or other approved load-break device.
- E.3.4** Personal protective equipment, including approved eye protection, shall be worn when underground switching operations are performed. A full face shield may also be worn as added protection.

### **E.4 *Grounding — URD***

**Note:** *A capacitance charge can remain in a URD cable after it has been disconnected from the circuit, and a static-type arc can occur when grounds are applied to such cables.*

- E.4.1** All URD cables and equipment — including services — that have

been energized or could become energized from any source, shall be considered as energized until the equipment is positively proven to be de-energized by approved voltage detector, and has been grounded.

- E.4.2** Before doing work on de-energized primary circuits or equipment, (1) a visible open break shall be provided; (2) a voltage test shall be made; and (3) the equipment shall be grounded in an equipotential zone (EPZ) if applicable; (4) If grounding or insulating is not feasible, workers can isolate themselves from any possible transfer of potential difference by isolation. **Note:** *All applicable LOTO procedures shall be followed for voltages over 600 volts.*
- E.4.3** When work is to be done on equipment or cables of an underground system, precautions to prevent backfeed shall be taken. This shall include grounding, (EPZ), or isolation of the secondary conductors where applicable.
- E.4.4** De-energized cables shall be grounded at a point as close to the work as possible before work is started.
- E.4.5** All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded (EPZ) or isolated before cables are worked.

## **E.5 Work on Energized Equipment — URD**

- E.5.1** All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded before work is done on the conductor, or before the cables are cut into or spliced.
- E.5.2** When work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances and by using approved insulated tools in order to prevent short circuits.
- E.5.3** When energized pad-mounted transformers are unlocked and opened, they shall be directly attended by a qualified employee. They shall be kept closed and locked at all other times.
- E.5.4** A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.
- E.5.5** Elbow connectors provide a great deal of flexibility in switching and system sectionalizing; however, only those connectors designed and approved for load-break use shall be used to connect or disconnect an energized circuit.
- E.5.6** Only tools with 1KV insulated handles shall be used for making energized secondary connections at 600V or less, or when work is performed within energized pedestals, pad-mount

compartments or submersible transformer enclosures.

- E.5.7** Only one energized secondary or service conductor shall be worked on at any one time, and protective devices shall be used to insulate or isolate it from all others.
- E.5.8** An approved shirt or coveralls, with full-length sleeves rolled down and cuffs buttoned, shall be worn when work is performed on any energized UG cable or apparatus.

## **E.6 Excavations — URD**

- E.6.1** Before opening an excavation, all interferences such as trees, sidewalks and foundations shall be removed or supported as necessary to protect employees and the public.
- E.6.2** The estimated location of utility and other underground installations that may be encountered during excavation work shall be determined before opening the excavation.
- E.6.3** When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means — usually by hand digging with insulated shovel and the use of suitable gloves.
- E.6.4** If electric cables are damaged, the following steps shall be taken.
  - a.** If the damaged cable belongs to a utility other than the one performing the work, this utility shall be notified at once.
  - b.** The area shall be barricaded and the public kept out until hazardous conditions can be eliminated.
- E.6.5** If gas lines are damaged, the following steps shall be taken as soon as possible:
  - a.** The hole shall be left open to allow the gas to dissipate into the atmosphere. All possible ignition sources shall be eliminated.
  - b.** Residents of the area shall be warned when necessary, and the public kept out of the area.
  - c.** The local fire department shall be notified immediately.
  - d.** The local gas supplier shall be notified at once.
  - e.** The local police department shall be notified if necessary.
- E.6.6** If communication cables are damaged, the communication company shall be notified at once.
- E.6.7** While the excavation is open, underground installations shall be protected, supported or removed to safeguard employees.
- E.6.8** A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are four feet or more in depth so as to require no more than 25 feet of lateral travel for employees.

- E.6.9** Employees exposed to vehicular traffic shall wear orange reflective vests or other suitable garment.
- E.6.10** No employee shall be permitted beneath loads handled by lifting or digging equipment. Employees shall stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.
- E.6.11** When mobile equipment is operated adjacent to an excavation and the operator does not have a clear and direct view of the edge of the excavation, a warning system such as barricades, a spotter or stop logs shall be utilized.
- E.6.12** Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.
- E.6.13** If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.
- E.6.14** Where the stability of adjoining buildings, walls or other structures is endangered by excavation operations, support systems such as shoring, bracing or underpinning shall be provided.
- E.6.15** Employees shall be protected from excavated materials or equipment that could fall or roll into excavations. Protection shall be provided by placing and keeping such materials or equipment at least two feet from the edge of excavations, or by using retaining devices that are sufficient to prevent materials or equipment from falling or rolling into the excavation.
- E.6.16** Daily inspections of excavations, the adjacent areas and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres or other hazardous conditions. Inspections shall be conducted before starting work, and as needed throughout the shift. Inspections shall also be made after every rainstorm. Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmospheres or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
- E.6.17** Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails shall be provided.

- E.6.18** When excavations are left open, warning devices, barricades or guardrails shall be placed to adequately protect the public and the employees.
- E.6.19** At the end of each workday, as much of the excavation as practical shall be closed. No more trench shall be open at one time than is necessary.
- E.6.20** Mechanical excavating equipment that is parked or operating on streets or highways shall be protected by proper warning devices.
- E.6.21** When it is necessary to leave excavating equipment unattended, the blade, bucket or scoop shall be lowered to the ground and the ignition system locked.
- E.6.22** Each employee in an excavation shall be protected from cave-ins by an adequate protective system — either sloping or benching, shoring or shield system — unless excavations are made entirely in stable rock or are less than five feet in depth, and examination of the ground by a competent person provides no indication of a potential cave-in.
- E.6.23** When choosing a protective system, a competent person shall take into consideration soil type, vibration sources, previously disturbed soil, layered soil, presence of water, heavy equipment work adjacent to the excavation, limited work area and other hazard-increasing conditions.
- E.6.24** Shoring and shield systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses or from being struck by members of the shoring or shield system.
- E.6.25** Removal of shoring systems shall begin at — and progress from — the bottom of the excavation. Members shall be released slowly so as to note any indication of possible cave-ins on the side of the excavations, or possible failure of the remaining members.
- E.6.26** Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of a sudden lateral load.
- E.6.27** Employees shall be protected from the hazards of cave-ins when entering or exiting the areas protected by shields.
- E.6.28** Employees shall not be allowed in shields when shields are being installed, removed or moved vertically.
- E.6.29** Sloping or benching, shoring or shielding for excavations greater than 20 feet deep shall be designed by a registered professional engineer. Refer to Table E-1 for soil type maximum slope requirements for excavations of less than 20 feet.

- E.6.30 For additional information on excavation requirements, refer to *OSHA Standard 29 CFR 1926, Subpart P, Excavations*.
- E.6.31 "Competent person" as used in this section is a person who meets all the requirements as set forth in the OSHA Standard 29 CFR 1926, Subpart P, Excavations.

## **E.7 Opening and Guarding Holes**

- E.7.1 Whenever the cover is to be removed from a manhole or a vault, or whenever any other obstruction to traffic exists, the following precautions shall be taken.
  - a. All obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares or flags. Traffic shall be warned in advance through signs, high-level standards, flashing lights, traffic cones or flaggers as may be required by the situation.
  - b. Where permissible and practical, the truck shall be placed to guard the work area against oncoming traffic.
  - c. A blowtorch or other open flame shall never be used to melt around a manhole or vault cover.
  - d. Manhole vault and service box covers shall always be removed and replaced by means of approved hooks or hoists.

## **E.8 Entering Underground Structures**

**Note:** Before entering a manhole or vault considered to be a confined space, employees shall be trained and follow confined-space procedures.

- E.8.1 Before an employee enters a street opening such as a manhole or an unvented vault, it shall be promptly protected a barrier, temporary cover or other suitable guard.
- E.8.2 No entry shall be permitted until the atmosphere is found to be safe by testing for oxygen deficiencies and the presence of explosive gases or fumes.
- E.8.3 Where unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry.
- E.8.4 Where factory-installed ladders are not in place, an approved nonconductive straight ladder shall be used in entering or leaving a manhole or vault. Climbing into or out of manholes by stepping on cables or hangers is forbidden.
- E.8.5 While work is being performed in manholes, a qualified employee trained in first aid and CPR shall be available in the immediate vicinity to render emergency assistance if required.
- E.8.6 Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until checked and identified by a qualified employee.

## **E.9 Work on Energized Cables, Manholes or Vaults**

- E.9.1 No employee shall approach — or take any conductive object without an insulated handle — closer to exposed energized parts of line or equipment than indicated in table D-1 unless the employee is insulated from the energized parts, the energized part is insulated from the employee and any other conductive object at a different potential, or the employee is insulated from any other conductive object.
- E.9.2 Employees shall not work on equipment or lines in any position from which a shock or slip will tend to bring the employee's body toward exposed parts that are at a potential different from the employee's body.
- E.9.3 When work is performed in the vicinity of exposed energized parts of equipment or lines, employees shall remove all exposed conductive articles, such as key or watch chains, rings, wristwatches or bands, or such articles shall be rendered nonconductive.
- E.9.4 All underground cables and apparatus energized above 600 volts shall be de-energized before work is done on the conductor or before the cables are cut into or spliced.
- E.9.5 Before any work is done on an energized cable less than 600 volts, other cables — and all grounded equipment with which contact can be made while working on the energized cable — shall be covered with rubber blankets or approved insulating shields. (Cables with non-metallic sheaths and those with an insulating jacket over the metallic sheath need not be covered.)
- E.9.6 Because of the characteristics of a low-voltage network system, when work is performed on cables or apparatus carrying less than 600 volts, employees shall wear class 0 rubber gloves. Employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances and in using proper insulated tools in order to prevent short circuits.
- E.9.7 Immediately after each conductor of an energized cable less than 600 volts is cut in two, the ends shall be insulated before another conductor is cut. During the course of the work, only one insulated conductor shall be worked at any one time.
- E.9.8 Manholes containing circuits energized above 15 KV shall not be entered until cables have been de-energized.

## **E.10 Work on De-energized Cables (Underground Manholes or Vaults)**

- E.10.1 When cables and apparatus are taken out of service to be worked on, the procedure outlined in Rule D-6 shall be followed.
- E.10.2 Before making an opening or removing a part of the sheath or sleeve of a cable, the line shall be grounded on the source side

and all possibility of backfeed shall be isolated and tested with an approved voltage detector to be de-energized.

- E.10.3** When primary cable is to be cut, the cable shall be speared at the work location by a remotely operated, grounded spear, or a short section of the shielding — if any — completely around the cable shall be removed and a test made with approved testing devices, to determine whether or not the cable is de-energized. If no indication of alive cable is detected, the employee may proceed with the work.

**E.11 *Pulling Cables***

- E.11.1** Employees shall not handle pull-wires or pulling-lines within reaching distance of blocks, sheaves, winch drums or take-up reels.
- E.11.2** Pull-wires, steel pulling-lines or metal rodding shall not be pushed through ducts where energized equipment is present unless another employee is stationed at the end of the run.
- E.11.3** Employees shall not remain in a manhole or vault during pulling operations involving heavy pulling strains unless they can take a position clear of the pulling line.
- E.11.4** Communications between manholes shall be maintained.

**E.12 *Moving Energized Cables in Manholes and Vaults***

- E.12.1** All cables operating at voltages greater than 600 volts shall not be moved under any circumstances.
- E.12.2** All energized cables shall be handled with Class 2 rubber gloves and sleeves.

**E.13 *Heating Materials in Manholes and Vaults***

- E.13.1** Fuel tanks containing liquefied petroleum gas shall not be placed in a manhole.
- E.13.2** Lighted torches shall not be left unattended.
- E.13.3** Lighted torches must be kept at a safe distance from flammable materials.
- E.13.4** Leather work gloves shall be worn when heating or working with hot compound.

Table E-1	
Maximum Allowable Slopes for Excavations Less Than 20 Feet Deep <sup>1</sup>	
Soil or Rock Type	Maximum Allowable Slopes (H:V)
Stable Rock	Vertical (90 degrees) <sup>2</sup>
Type A <sup>3</sup>	¾:1 (53 degrees)
Type B	1:1(45 degrees)
Type C	1½:1 (34 degrees)
<sup>1</sup> Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer. <sup>2</sup> Numbers in parentheses are angles expressed in degrees from the horizontal. Angles have been rounded off. <sup>3</sup> A short-term maximum allowable slope of ½ H:1V (63 degrees) is allowed in excavations in Type A soil that are 12 feet (3.67 meters) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 meters) in depth shall be ¾ H:1V (53 degrees).	

## F. Substations

### F.1 *Working in Substations*

- F.1.1** Approved warning signage shall be maintained on all premises, per company standards and policies.
- F.1.2** Access to substations is limited to qualified employees and company-authorized personnel. New employees, and those not familiar with the hazardous conditions inherent in a substation, shall be given a job briefing before being permitted to enter.
- F.1.3** When entering and before leaving a substation for work purposes, employees shall notify the appropriate control center operator, provided they can be reached by telephone or company radio. Work purposes are any activities that could affect the operation of the substation — including operating any transmission/distribution equipment, or working near transmission/distribution lines or equipment — if the possibility exists to affect the transmission/distribution system, or when entering any transmission/distribution substation building.
- F.1.4** *Deleted.*
- F.1.5** Company-issued hard hats and safety glasses shall be worn at all times working within the confines of any substation fence.  
**Exception:** *Hard hats may be removed while inside control houses, unless overhead work is being performed there.*
- F.1.6** Gates to stations shall be kept closed and locked when authorized personnel are not in the station. When authorized personnel are working in the station, the gate shall be kept closed and shall be locked where required. Doors to enclosures (other than control cabinets) containing exposed energized electrical equipment shall be kept closed and locked, or equipment shall be barricaded.
- F.1.7** Before work is to commence, a “job briefing” shall be held with all employees to orient each employee as to:
- The hazards associated with the job.
  - Work procedures involved.
  - Special precautions.
  - Energy source controls.
  - Personal protective equipment required.
  - Location of energized equipment in, or adjacent to, the work area.
  - Limits of any de-energized work area.
- F.1.8** When entering a substation where work is in progress, report your presence to the person(s) in charge for a safety briefing.
- F.1.9** Metal fences enclosing electrical equipment shall be adequately grounded and maintained in safe condition.



- F.1.10** Temporary fencing shall be properly grounded and bonded to the existing fence.
- F.1.11** Damaged fences, broken switches, and unlocked gates and control houses shall be promptly reported to the supervisor or person in charge.
- F.1.12** Access to station control houses and all switches shall be kept clear and accessible.
- F.1.13** The open space in switch houses, control centers and operating panels shall be kept clear of rubbish and shall not be used for storage except during construction or maintenance.
- F.1.14** Employees shall not enter electrical equipment rooms or enclosures unless they have been authorized or their duties require them to be there.
- F.1.15** Operating handles of disconnect switches, transformer no-load tap changers and other similar devices which could cause equipment damage if operated by unauthorized persons shall be locked with an approved lock.
- F.1.16** Removable handles for manual operation of circuit breakers shall not be left in their sockets and shall be properly stored.
- F.1.17** Class 2 rubber gloves and sleeves are not required in the substation if the work situation is to work solely on controls or apparatus not associated with the primary voltage of the breaker, transformers, regulator, etc., or such a situation where a tool or piece of equipment will not be carried or used within the clearance set forth in Table D-1.
- F.1.18** No employee may approach, or take any conductive object without an insulated handle, closer to exposed energized parts than the clearances set forth in Table D-1 unless:
  - a.** The employee is insulated from the energized part.
  - b.** The energized part is insulated from the employee and any other conductive object at a different potential.
  - c.** The employee is insulated from any other conductive object, as during live line work.
- F.1.19** Electric equipment, lines and circuits shall be considered energized until determined by testing to be de-energized and grounded.
- F.1.20** An employee shall not begin work on equipment or lines until proper clearance is obtained from the responsible authority. Where these instructions are given by telephone or radio, each person shall satisfy herself/himself of the identity and authority of the other person.
- F.1.21** Metal ladders shall not be used in substations.  
**Exception:** In EHV substations (345KV **and** 500KV), metal ladders

*will be permitted upon approval of the supervisor on the job.*

- F.1.22** When carrying long, conductive material, tools or equipment in energized areas of substations, they shall be held by at least two employees — one at each end — and carried below shoulder height.
- F.1.23** Steel tapes and rulers shall not be used in the energized areas of a substation. Fish tapes and steel tapes may be used on or below ground. Extreme caution shall be used when working in areas of energized underground cables.
- F.1.24** Safety interlocks shall not be bypassed or made inoperative without the approval of the responsible supervisor — and then only when absolutely necessary. It shall be the responsibility of this supervisor to be sure that the necessary procedures are set up to guard against an accident while the interlock is bypassed.
- F.1.25** Employees shall use special care when working in or around circuit breaker mechanisms, linkages, transformer tap changers, etc. This type of equipment shall be locked, blocked, tagged-out or otherwise disabled, if practicable, while work is being performed on it. If it cannot be so disabled or made inoperative, the work shall be performed in such a manner that employees will not be injured if the equipment operates.
- F.1.26** Lightning arresters, capacitors, capacitor bushings, generator surge protectors and similar equipment shall be properly discharged before work is performed on them.
- F.1.27** Explosions may occur during maintenance work because of ignition of acetylene or other combustible gases that may accumulate from arcing in oil circuit breaker tanks, transformers and transformer tap changers. Special precautions — including ventilation, grounding storage tanks and oil drums — shall be taken to guard against this hazard. No smoking, open flames or other ignition sources shall be permitted in the area.
- F.1.28** Before working on equipment that may have combustible gases present, equipment shall be force-ventilated with air or nitrogen until the air space tests below the LEL limit for combustible gases. Retests shall be made as needed.
- F.1.29** When transferring liquid, the vehicle or trailer pumping equipment must be properly grounded to the station ground grid; or while connected to a 120/240 VAC source.
- F.1.30** If any quantity of oil is spilled, it shall be reported to appropriate supervision.
- F.1.31** Before driving a vehicle into a substation, the driver shall check the overhead clearance of the vehicle (e.g., radio antenna, boom and basket) to prevent contact with low lines or other structures, or any energized equipment.

- F.1.32** Movement and operation of mechanical equipment within hazardous areas must be controlled by a qualified person, and at all times shall maintain safe clearances from energized bus and equipment.
- F.1.33** Only those designated persons who are qualified and trained shall operate the hoisting equipment. Refer to section D.8 pertaining to cranes, derricks and hoisting equipment.
- F.1.34** Adequate clearance from energized lines shall be maintained when vehicles and equipment are in substations. No materials, equipment or vehicles are to be stored under an energized bus, near energized equipment or in areas of ingress or egress. Other areas of the station may be used for storage with the approval of the substation manager.

## **F.2 Substation Climbing**

- F.2.1** When working at elevated locations above four feet (with exception of stepladders, safety platform ladders and properly set-up scaffolds), employees shall comply with all substation fall protection guidelines.
- F.2.2** Employees shall not attach lanyards or safety belts to — or depend upon — lines, station bus work, station post insulators or lightning arresters to support their weight.
- F.2.3** Caution must be exercised to secure all equipment and tools when working aloft. Tools shall never be placed unsecured on elevated places or thrown from place to place or person to person.

## **F.3 Substation Barricades and Barriers**

- F.3.1** When working on the ground or overhead, approaches to energized equipment adjacent to equipment on which work is to be done — and any similar equipment — shall be blocked off with approved barricades or barriers.
- F.3.2** When working overhead where barricades or barriers are not practical to install, red flags shall be used at all approaches to energized equipment.
- F.3.3** The supervisor or person in charge shall be responsible for determining what barricades, barriers or red flags are necessary, and for seeing that they are properly installed and maintained.
- F.3.4** All barriers, barricades and warnings signs shall be heeded. Persons seen in dangerous situations shall be warned without being startled. Employees not required to be near potentially dangerous places shall be kept away from them.
- F.3.5** Equipment with guards removed to perform maintenance operations shall not be operated while guards are removed (except for maintenance certification).

## **F.4 Lockout/Tagout**

- F.4.1** Switching of equipment for clearance shall comply with company lockout/tagout procedure safety rules for Transmission and Distribution (de-energizing lines and equipment for employee protection).
- F.4.2** Servicing and maintenance of equipment shall comply with company lockout/tagout procedure safety rules (for servicing and maintenance of machines and equipment).

## **F.5 Batteries**

- F.5.1** Approved company apparel — gloves, goggles and face shield, and aprons — shall be worn when installing, removing or servicing station storage batteries or making electrolyte, unless no splash hazard is present.
- F.5.2** Storage batteries produce hydrogen while being charged, and may create an explosive gas mixture. Enclosed areas used to charge or store batteries shall be adequately ventilated.
- F.5.3** Any equipment that could cause sparks or electric arcs shall not be taken into the battery charging area.
- F.5.4** Smoking, welding, spark-producing equipment and open flames shall not be permitted within 35 feet of battery charging areas. "No Smoking" signs shall be conspicuously posted in such areas. Adequate fire protection shall be available.
- F.5.5** Employees shall use special care when cleaning, testing or servicing batteries to prevent a short circuit. Employees should use insulated tools when working on substation batteries.
- F.5.6** Whenever work must be performed in a location or position from which items such as tools and equipment may be accidentally dropped upon a station storage battery, proper measures shall be taken to protect the battery before the work is started.
- F.5.7** When electrolyte is made for storage batteries, the acid shall be poured slowly into the water. Water shall not be poured into the acid, because an explosion may occur.
- F.5.8** If battery acid gets into an employee's eye, the eye shall be flushed immediately at an eye-wash station for several minutes. The eye should not be rubbed. The employee shall be given medical treatment promptly. Water for drenching eyes shall be kept unobstructed within 25 feet of battery handling areas.
- F.5.9** If battery acid contacts an employee's body or clothing, the employee shall promptly neutralize it with baking soda and wash with plenty of water.
- F.5.10** Good housekeeping practices shall be maintained in battery storage and charging areas.



## F.6 ***SF<sub>6</sub> Gas-Filled Equipment***

- F.6.1 Refer to company procedures for working with equipment filled with SF<sub>6</sub> gas. Some equipment may require the use of respirator procedures, which shall be followed.

## F.7 ***Confined or Enclosed Space***

- F.7.1 All substation employees shall be trained to identify equipment that is — or may become — a confined space.
- F.7.2 Prior to entering a confined or enclosed space, employees shall be trained and follow company rules of the Confined Space Procedures Program.

## F.8 ***Capacitors***

- F.8.1 Capacitors shall be disconnected from their source for a minimum of five minutes before shorting and grounding the terminals.
- F.8.2 Disconnected capacitors shall not be re-energized for at least five minutes.
- F.8.3 Capacitors and energized racks shall be considered at full rated voltage until they have been disconnected and discharged per company grounding standards.
- F.8.4 All new capacitors shall be capacitance-tested before being energized.
- F.8.5 Capacitors shall have a shorting wire in place during storage.
- F.8.6 Employees shall wear Class 2 rubber gloves and sleeves and use an approved shotgun or switch stick while shorting or grounding terminals.
- F.8.7 Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

**Caution:** *Substation capacitors with energized frames require special grounding procedures.*

## F.9 ***Regulators***

- F.9.1 When energizing or de-energizing a regulator, the “bypass” switch must never be opened or closed unless the regulator is at “0” (neutral position) and the controls turned off. A regulator neutral device should be used to determine the position of the regulator mechanism.

## F.10 ***Testing***

### F.10.1 High-Voltage Tests

- a. Doble or high-potential test sets: Employee handling high-voltage cables shall wear Class 2 rubber gloves and sleeves at all times. **Exception:** *When making connections in oily*

*environments, such as on vacuum bottles in LTC compartments — and then under supervision, all other steps of this section shall be followed.*

- b. When employee is moving or changing connection of high-voltage cables where test voltage above 15,000 volts is available, the high-potential test set shall be visibly disconnected from its power source.
- c. The high-voltage cables of the Doble or high-potential test shall be barricaded from accidental contact by other employees who are not wearing class 2 rubber gloves and sleeves.
- d. When voltage-testing equipment in shop areas, equipment under test shall be case-grounded and barricaded.

### F.10.2 High Current Test

- a. When employees are moving or changing high current cables on load box or recloser test sets, the employee shall wear class 0 rubber gloves.
- b. The high-current cables of the test set and equipment shall be barricaded from accidentally contacting other employees while testing.
- c. Equipment being tested shall be case-grounded while testing.

### F.10.3 High Vacuum

- a. Employees shall avoid standing or climbing on equipment under high vacuum if possible.
- b. If employee must climb on equipment under high vacuum, care must be taken to not stand on any unsupported surface.



## **G. Metering**

### **G.1 General**

- G.1.1** Before entering customer property, employees should announce their presence and state their business, if practical.
- G.1.2** When approaching or working on customer property, employees shall watch for tripping hazards, defective stairs, and the presence of dogs, cats or other potentially dangerous animals.
- G.1.3** Employees shall not record meter readings or notations while walking.
- G.1.4** Proper gloves, proper FR/Arc/Flame-Rated Clothing (National Fire Protection Association (NFPA) 70E — 2015 standard, or Section 41 of 2012 National Electrical Safety Code (NESC) or NFPA 2112), company-issued hard hat and proper eye protection shall be worn when installing or removing single-phase meters from meter sockets, including turn-on or turn-off applications and voltage or amperage checks (any voltage).
- G.1.5** Company-issued hard hat, proper eye protection, proper arc-rated clothing and low voltage gloves are required personal protective equipment when:
  - a.** Working in an energized meter base or panel, making contact with the energized terminal or part.
  - b.** Working with bottom connected type meters.
  - c.** Working on the energized test block for PT and CT metering installations.
  - d.** Removing or installing energized three-phase, self-contained meters.
  - e.** Working on any 300- to 600-volt energized meter installations.
  - f.** Making ampere and voltage checks with approved test equipment on circuits or equipment energized at 300 to 600 volts.
  - g.** When working on energized circuits or equipment in wet, damp or other hazardous locations.
  - h.** Employees exposed to the hazards of flames or electrical arcs shall not wear clothing that, when exposed to flames or electric arcs, could increase the extent of injury. Flame-retardant clothing that meets the requirements of either the National Fire Protection Association (NFPA) 70E -2009 standard, or Section 41 of 2007 National Electrical Safety Code (NESC), or their most current revision, shall be used. When working on or near live-line parts where the possibility of an electric arc exists, protective clothing with full-length sleeves rolled down and buttoned shall be worn in addition to an electrical safety hat. When work is performed in the vicinity of exposed energized parts of equipment, employees shall

remove all exposed conductive articles such as key or watch chains, rings, wristwatches or bands, if such articles increase the hazards associated with inadvertent contact with the energized parts.

- G.1.6** Face shields and balaclavas are required additional personal protection for 480-volt meter change-outs. **Note:** *Additional PPE may be required, contact supervisor or safety specialist before energized work.*
- G.1.7** All 480-volt meter installations shall be labeled "480 volt" on the inside and outside of the meter base. Also, a "480 volt" tag shall be attached to the meter seal.
- G.1.8** A meter-pulling device shall be used when removing or installing meters energized at 300 to 600 volts. Meters with smoked or apparent internal damage, or cracked or broken glass covers, shall be removed with a meter puller. Cracked or broken meter covers shall not be removed with bare hands.
- G.1.9** Meter sockets shall be inspected before the meter is installed and/or the service is energized. Checks shall be made to insure there is no socket damage, loose connection or foreign object present that could cause a short circuit or flashover.
- G.1.10** Before installing a socket meter or operating the bypass lever on a new service, or while reconnecting an old service, a test for proper voltage shall be made. Also, proper tests shall be made to insure there are no backfeeds, grounds, cross-phasing or phase-to-ground faults through the meter or meter socket.
- G.1.11** When setting socket-type meters, the load side terminal shall be entered first, followed by the source side where possible. The removal of the meter shall take place in reverse order. Care shall be taken to prevent the meter ring from coming into contact with socket terminals.
- G.1.12** Before removing a meter, a visual inspection shall be made to determine if the meter or meter socket is damaged. If damage is indicated, further investigation should be made to determine if the socket might need to be de-energized before removal of the meter.
- G.1.13** If the employee determines the load is sufficient to warrant reduction or disconnection of load on installations where bypassing methods are not available, one of the following methods may be used before the meter is removed or exchanged.
  - a. Using the facility's main switch.
  - b. De-energizing the service.
- G.1.14** Only approved volt meters or voltage testers shall be used for determining whether a circuit is energized.

- G.1.15** Meter test equipment shall be inspected before use for broken or defective parts. It is the responsibility of the user to turn in all defective equipment.
- G.1.16** During testing, the energized socket or test terminal shall not be left unguarded. If a socket is to be left energized, a meter or approved socket cover shall be in place before the worker leaves the area.
- G.1.17** A check shall be made to ensure that all instrument transformer cases, secondary return wiring and associated enclosures are properly grounded.
- G.1.18** The secondary circuit of an energized current transformer shall never be opened under any circumstances. The transformer circuit shall be shunted or short-circuited before any meter, instrument or other device connected in the circuit is removed or disconnected.
- G.1.19** The secondary circuit of an energized-potential transformer shall never be shunted or short-circuited.
- G.1.20** *Primary meter installations:* The supervisor or lead person shall place or request a "Caution Card" and switch the recloser to non-reclosing on the circuit before bypassing primary metering equipment (where applicable) prior to the start of work.
- G.1.21** *Primary meter cubicles:* Visually inspect all bypass and disconnect switches before operating. After switching, test to insure transformers and switch blades are de-energized. Cover all energized parts with approved protective equipment.
- G.1.22** When possible, all primary metering equipment shall be de-energized, voltage-tested and grounded per company standards before work is performed on equipment.
- G.1.23** When making a comparative voltage test on potential transformers where voltages above 600 volts are present, a barrier to prevent contacting energized equipment shall enclose the test area. Walls or fences shall guard permanent test areas to keep employees out. Temporary test areas shall be guarded by barrier tape to which safety signs are attached.

*H. Gas*

## H. Gas

### H.1 *General*

**Note:** Natural gas is not poisonous; however, it contains no oxygen and, if present in sufficient quantities to displace the air, can cause suffocation due to lack of oxygen.

The explosive range of gases lies between two limits, which are:

- a. The lower explosion limit (4% LEL) of a flammable gas mixed with air is the percentage (by volume) of gas below which an explosion cannot occur because the mixture is too lean.
- b. The upper explosion limit (15% UEL) is the percentage of gas above which an explosion cannot occur because there is sufficient air, the mixture being too rich.

- H.1.1 Only approved methods shall be used to locate gas leaks.
- H.1.2 Employees shall eliminate all ignition sources, including smoking, where the possibility of escaping gas exists.
- H.1.3 Fire-extinguishing equipment, suitable in capacity and class for the area or condition, shall be made available and be positioned upwind from escaping gas.
- H.1.4 Special care shall be taken to remove recognized potential fire hazards so that fire extinguishers provided for protection against the primary hazard during a job will be suitable for that job.
- H.1.5 Precautions shall be taken to avoid static electricity, with particular attention to plastic pipe.
- H.1.6 Engine-driven equipment shall be placed on the job site upwind and away from possible gas leakage.
- H.1.7 Employees, when using road-boring equipment, shall take precautions to prevent injury from the rotating auger.

### H.2 *Working on Customers' Premises*

- H.2.1 Open flames shall never be used for thawing frozen meters or piping.
- H.2.2 Employees shall wear approved eye protection when lighting gas pilots and burners.
- H.2.3 Precautions shall be taken when purging house lines and other interior gas piping:
  - a. Ensure that all potential ignition sources have been identified and eliminated.
  - b. Ensure that there is a valve or device available to control the flow of gas during the purging operation.
  - c. Identify a safe area for the discharge of the gas released during the purging operation.

### **H.3 Line-Stopping and -Tapping Work**

- H.3.1** Experienced and qualified persons shall direct the use of line-stopping or -tapping equipment.
- H.3.2** An employee shall be in close attendance and immediately available to render emergency assistance to employees engaged in the use of line-stopping, -tapping or -plugging equipment.
- H.3.3** Care shall be taken to prevent damaging the stoppers by exposure to excessive heat during welding or flame cutting.
- H.3.4** When using "bag stoppers" to stop elevated and low pressure gas mains, the *Gas OM&I Procedures Manual* shall be followed.
- H.3.5** Purging of gas lines shall be done as outlined in the *Gas OM&I Procedures Manual*.

### **H.4 Construction of Gas Pipelines and Services**

- H.4.1** The following precautions shall be taken when handling, loading, hauling or unloading pipe.
  - a.** Employees shall use approved slings, skids or pick-up clamps on larger-diameter pipes. Skids, when used, shall be properly secured.
  - b.** Employees shall use approved load-binders (boomers) to secure the pipe to the trailer or truck.
  - c.** Stanchions or chocks shall not be removed so as to permit the pipe to roll off the truck or trailer.
- H.4.2** Operators are responsible for the daily inspection of their own equipment.
- H.4.3** The following precautions shall be taken when working with pipe coatings.
  - a.** Both cold- and hot-applied products shall be used with care to avoid injury to skin, eyes or respiratory system.
  - b.** Gasoline or other flammable liquids shall not be used for cleaning.
  - c.** A cutting torch shall not be used to apply or remove pipe coating.
  - d.** Primer or pipe coating shall not be applied to hot welds.

### **H.5 Compressor Stations**

- H.5.1** A diagram of station piping shall be maintained on the premises, illustrating primary piping, valves and equipment. Emergency valves shall be represented so as to provide quick reference in case of an emergency.
- H.5.2** When stations are unattended, gates and outside doors shall be locked. When employees enter a locked station, gates and outside doors shall be left unlocked while the station is occupied.
- H.5.3** Temporary isolation of plant piping or compressor units shall be

done in accordance with approved established procedures.

- H.5.4** All machinery and energy sources, where unplanned motion or release of energy can cause injury, shall be blocked and/or locked and tagged as specified prior to any maintenance, inspection, cleaning, adjusting or servicing that requires entrance into, or potential contact by, personnel.
- H.5.5** Belt guards, flywheel and inspection covers shall be left in place while compressors are running.
- H.5.6** Before entering a non-permit-required confined space, an air quality determination shall be made.

### **H.6 Meter Shop, Storage and Proving Room**

- H.6.1** Meters that are moved by hand trucks shall be placed so that they will not fall or topple over.
- H.6.2** Meters stored in tiers shall be stacked, blocked or otherwise secured to prevent sliding, falling or collapsing.
- H.6.3** Care shall be used in the placement of wooden racks or hand trucks so as to prevent persons from tripping or falling.
- H.6.4** Smoking or open flames shall not be permitted in the paint spray area of the meter shop during spraying operations. "No Smoking" signs shall be conspicuously posted in this area.
- H.6.5** Employees using chemicals shall be instructed in the proper use and the potential hazards involved, along with personal protective equipment (PPE) required.

### **H.7 Drilling of Underground Storage Wells**

- H.7.1** Experienced and qualified persons shall direct the drilling of gas storage wells.
- H.7.2** Suitable approved personal protective equipment shall be used by persons (including contractors' employees) when working at or near a drilling rig.
- H.7.3** Employees shall stand clear while tools are being lowered into, or withdrawn from, the drilled hole.
- H.7.4** Adequate machine guards shall be placed on equipment, where needed, to protect the drill operator and other employees from hazards.
- H.7.5** After a well has been drilled to the top of the gas rock formation and the production casing has been installed, the following precautions shall be taken.
  - a.** The drilling house shall be located at least 100 feet from the well.
  - b.** Casing, drilling tools or other spark-producing items not being used in the drilling of the well shall be moved to a location at least 1,000 feet from the well.
  - c.** When using a rotary drilling rig, a proper gas blow-out

preventer shall be in place while drilling through the gas storage formation.

- d. The water tank shall be located at least 100 feet from the well.
- e. If liquefied petroleum fuel — such as propane — is used, the storage tank shall be located at least 100 feet from the well.
- f. Vehicles shall not be allowed within 100 feet from the well while the drilling rig is operating.
- g. Flammable or combustible liquids shall be located at least 100 feet from the well.
- h. Matches or lighters shall not be permitted within 100 feet of the well.
- i. Smoking or open flames shall not be permitted within 100 feet of the well.
- j. An approved electrical bonding (a bonding jumper) shall be installed from the drilling rig to the welling casing.

**H.7.6** When it is necessary to climb the drilling rig mast, the employee shall be protected by approved fall-protection equipment.

**H.7.7** When gas is encountered while drilling a well or running the acid line, adequate fire extinguishers shall be placed approximately 150 feet upwind from the well.

## **H.8 Acidizing Storage Wells**

**H.8.1** Experienced and qualified persons shall direct the acidizing of gas storage wells.

**H.8.2** Suitable, approved personal protective equipment shall be used by persons (including contractors' employees) when working at or near a well being acidized, or while transferring acid from storage to the acidizing rig.

**H.8.3** Tanks, containers and vehicles used to store or transport acid shall be properly labeled.

**H.8.4** Each acidizing rig shall be equipped with an adequate fire extinguisher, first aid supplies and personal protective equipment.

**H.8.5** Hoses, valves and fittings shall be visually checked for damage or defects before each use, and shall also be observed during pumping operations for possible leaks.

**H.8.6** A check valve shall be installed on the outlet of the high-pressure hose that is used to transfer acid from the acidizing rig to the storage well.

**H.8.7** An approved electrical bonding device (a bonding jumper) shall be installed from the acidizing rig to the wellhead before starting pumping operations.

**H.8.8** An automatic pressure-relief device and a pressure-indicating

gauge shall be installed on the outlet side of the high-pressure acidizing pump.

**H.8.9** While a gas storage well is being cleared of acid, the following precautions shall be taken.

- a. Vehicles, other than those involved in acidizing, shall not be allowed within 100 feet of the well.
- b. When practicable, vehicles shall be located upwind from the well.
- c. Engines shall be turned off.
- d. Smoking or open flames shall not be permitted within 100 feet of the well.
- e. An approved electrical bonding device (a bonding jumper) shall be installed between the wellhead and the catch tank.

**H.8.10** Hoses, valves, piping and fittings that are used between the high-pressure acidizing pump and the wellhead shall be hydrostatically tested at least once every year to a pressure equal to 1.5 times the maximum operating pressure for a minimum of four hours. The maximum pressure rating of the hose shall not be exceeded during the test.

**H.8.11** Suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

## **H.9 Gas Well Operations**

**H.9.1** Experienced and qualified persons shall direct the maintenance of gas wells.

**H.9.2** Approved personal protective equipment shall be used by persons (including contractors' employees) when working at, or within 100 feet of, the well being worked on.

**H.9.3** Gas readings shall be taken 10 feet from the well in a 360-degree circle when gas is present during operations. If the gas concentration exceeds 1%, fire suits must be worn; otherwise, long-sleeve fire-retardant shirts shall be worn within 100 feet of the well. All trucks shall have a fire suit in case it is needed.

**H.9.4** If the possibility exists for H<sub>2</sub>S to be present in excess of 10 ppm (by volume) in the breathing zone, the following shall apply.

- a. All personnel should be trained prior to the start of work.
- b. H<sub>2</sub>S detection equipment will be fixed downwind on the rig floor.
- c. All personnel shall wear H<sub>2</sub>S monitors when working on the well.
- d. Breathing equipment will be available.
- e. A contingency plan will be in place.
  1. Personnel will be assigned responsibilities.



2. Emergency telephone numbers will be available.
3. Location of safety equipment will be noted.
- f. An action plan will be in place.
  1. Move away from H<sub>2</sub>S.
  2. Don breathing equipment.
  3. Alert affected personnel.
  4. Assist anyone in distress.
  5. Proceed to designated assembly area.
- g. Legible warning signs, such as **Hydrogen sulfide operations** — **Enter only when monitoring shows area to be safe** or **Respiratory protection equipment must be worn beyond this point** will be posted at appropriate locations when hydrogen sulfide may be encountered.
- h. Wind direction indicators will be installed (flagging on guy lines or vertical poles).
- i. PPE (breathing apparatus) is required if H<sub>2</sub>S levels exceed 10 ppm weighted average over eight hours, or 15 ppm averaged over 15 minutes, or any time H<sub>2</sub>S levels exceed 20 ppm.

- H.9.5** Vehicles not involved in the operation should be located a minimum of 100 feet from the well.
- H.9.6** A **No Smoking or Open Flame** sign shall be posted in the vicinity of operations that constitute a fire hazard.
- H.9.7** Smoking or open flames shall not be permitted within 100 feet of the well.
- H.9.8** Cell phones shall not be turned on within 100 feet of the well.
- H.9.9** When wells are pumped, all non-essential personnel shall stay back 100 feet.
- H.9.10** Fall protection shall be used for work at more than four feet above the ground.
- H.9.11** Eye-wash equipment shall be available.
- H.9.12** Well-service rigs shall have readily accessible a minimum of two 20-pound-capacity fire extinguishers with a Class BC rating.
- H.9.13** Hoisting lines should be visually inspected once each day when in use. They should be taken out of service when:
- a. three broken wires are found within one lay length of 6 by 7 wire rope;
  - b. six randomly distributed broken wires are found within one lay length of 6 x 8 construction; or
  - c. three broken wires are found within one lay length of 6 x 8 construction.
- H.9.14** High-pressure hoses shall be properly secured when pressurized.
- H.9.15** Appropriate guards or shields shall be in place on well-service units to prevent risk of injury.

- H.9.16** Well-service rigs shall be maintained in a workmanlike fashion.
- H.9.17** Tripping hazards should be minimized to the extent feasible.
- H.9.18** One-inch acid line shall not be removed from well until it has been ascertained that the well is dead. Well will be monitored at all times during the operation; if — at any time during the removal of the one-inch acid line — the well shows indications of coming back on gas, the removal operation shall cease and additional gel shall be added until the well is dead.
- H.9.19** Wells being worked on within 100 feet of a roadway shall have gas and H<sub>2</sub>S levels measured at the roadway. If natural gas levels exceed 1% or H<sub>2</sub>S levels exceed 10 ppm, traffic control shall be instituted.
- H.9.20** Wells being worked on within 100 feet of an occupied dwelling shall have gas and H<sub>2</sub>S levels measured at the dwelling. If natural gas levels exceed 1% or H<sub>2</sub>S levels exceed 10 ppm, the occupants shall be evacuated.

***I. Motor Vehicle***

## **I. Motor Vehicle**

### **I.1      *General***

- I.1.1**    It is the responsibility of every employee who drives a company vehicle to know and obey all local, state and federal laws and regulations covering the vehicle type and class that is driven. The employee shall be familiar with, and abide by, company rules and policies relative to the driving of company vehicles. The driver shall be personally responsible for fines and other penalties assessed.
- I.1.2**    Employees shall not drive company vehicles on a public thoroughfare unless they have a proper and valid driver's license in their possession permitting them to drive the type and class of vehicle for which they have been assigned. They shall report any restriction, changes, convictions of all moving violations or loss of driver's license immediately to their supervisor.
- I.1.3**    Supervisors shall not permit unauthorized employees or other unauthorized persons to drive vehicles for the company.
- I.1.4**    The driver of a company vehicle shall not transport unauthorized persons.
- I.1.5**    Vehicles shall be kept in safe condition and driven in a safe and courteous manner. Before driving a vehicle for the company, the driver shall assure himself/herself, insofar as can be determined, that the vehicle is in safe condition. Drivers shall be responsible for pre-trip/post-trip inspections as required by governmental regulations and shall be responsible for reporting vehicle defects to the garage or repair shop.
- I.1.6**    The following precautions shall be observed when fueling a vehicle.
  - a.** The engine shall be shut off.
  - b.** The fuel hose nozzle shall be kept in contact with the vehicle's fuel tank fill-pipe to avoid static sparks.
  - c.** Radio transmitters shall not be used.
  - d.** Overfilling of fuel tanks shall be avoided.
  - e.** The driver shall remain with the vehicle during fueling.
  - f.** Cell phones and company radios shall be turned off during the entire fueling process.
- I.1.7**    A copy of the Kentucky Dept. of Transportation (DOT) accident reporting form — as well as any other forms required by company policies or local, state and federal laws and regulations — shall be carried in the vehicle at all times.
- I.1.8**    The driver of a vehicle shall be familiar with the capacity and required clearances for the safe use of the vehicle.

- I.1.9** The driver shall inspect windshield wipers frequently to insure they are in good operating condition, and make sure that windows and windshield have sufficient visibility for safe operation of vehicle.
- I.1.10** Objects or persons being transported shall be located so that the driver's view will not be obstructed and the safe operation of the vehicle will not be hindered.
- I.1.11** Drivers of radio-equipped vehicles shall be sure that proper clearance is maintained between the antenna and energized lines and equipment or other structures.

## **I.2 Operation**

- I.2.1** Before the operation of a motor vehicle, the operator shall examine the area around the vehicle ("Circle of Safety").
- I.2.2** The operator of a motor vehicle shall clearly signal any intention of turning, passing or stopping.
- I.2.3** Drivers shall not permit more than two additional persons in the front seat, and seat belts shall be worn by all occupants while the vehicle is in motion.
- I.2.4** A driver shall not operate a vehicle when medically, physically or mentally unfit to do so.
- I.2.5** Drivers shall yield the right-of-way to emergency vehicles such as police cars, fire trucks, and ambulances.
- I.2.6** Low-beam headlights (not parking lights) shall be used from one-half hour before sunset to one-half hour after sunrise, or whenever visibility demands.
- I.2.7** Vehicles driven after dark shall not be operated at a speed that prevents stopping within the distance clearly illuminated by the headlights.
- I.2.8** The driver of a vehicle shall not attempt to pass another vehicle going in the same direction unless the driver can see far enough ahead to be sure that the vehicle can be passed safely. Proper signals shall be used to warn other drivers.
- I.2.9** Drivers shall keep a sharp lookout for children, especially in school zones or play areas. The driver shall reduce the vehicle's speed and be prepared for an immediate stop.
- I.2.10** The driver of a vehicle shall be courteous toward other operators and pedestrians. Drivers shall practice defensive driving — that is, make every effort to avoid an accident even though the other party may be in error. Do not insist on your so-called right-of-way.
- I.2.11** The operator of a vehicle shall maintain the vehicle under control so as to be able to bring it to a complete stop within the assured clear distance ahead. A following distance of at least one second for each 10 feet of vehicle length shall be allowed for speeds below

40 miles per hour. At greater speeds, add an additional second.

- I.2.12** While stopped in traffic, the driver shall maintain adequate distance from the vehicle in front. The forward vehicle's rear tires should be in view.
- I.2.13** Drivers of vehicles shall not permit anyone to ride on the running boards, fenders or any part of the vehicle except on the seats. Passengers shall not stand up in moving vehicles.
- I.2.14** Employees shall not ride on trailers.
- I.2.15** Employees shall not jump on or off vehicles in motion.
- I.2.16** Transporting personnel in the cargo bed of a pickup truck shall not be permitted.
- I.2.17** Drivers of vehicles shall approach railroad crossings cautiously and be prepared to stop clear of the tracks. When transporting hazardous materials, drivers shall bring the vehicle to a complete stop no closer than 15 feet from the nearest track. Drivers shall proceed only if the way is clear.
- I.2.18** Driver shall not shift gears when crossing railroad tracks.
- I.2.19** When approaching a school bus that has stopped to load or unload passengers (except on divided highways), the driver shall stop the vehicle and proceed only after the school bus is in motion.

## **I.3 Parking**

- I.3.1** Except in an emergency, drivers shall park their vehicles only in positions permitted by law. Care shall be used in parking to avoid accidents or property damage.
- I.3.2** Where work requires that a vehicle or equipment be parked on the travel portion of a street or highway, or closer than 10 feet to the traveled road surface, traffic control procedures shall be used as needed to regulate, warn or guide traffic in accordance with Kentucky Department of Transportation guidelines.
- I.3.3** When a vehicle is temporarily parked along a highway at night, the parking lights shall be left on, and if the vehicle is so equipped, the flashing and/or rotating lights shall be turned on.
- I.3.4** To change a tire or make other necessary repairs along a highway, the driver shall pull off the pavement as far as possible. Flashing and/or rotating lights shall be turned on. Traffic-control procedures and emergency-warning devices shall be used as required.
- I.3.5** When a vehicle is parked on an incline, the driver shall be sure that the brakes are properly applied, the engine is shut off and the vehicle is in the lowest gear or in the "Park" position. The vehicle's front wheels shall be turned at an angle to the adjacent curb or the vehicle shall be chocked.

- I.3.6 Occupants should enter or leave a parked vehicle on the curb side. If doors must be opened on the road side, extreme caution should be exercised to avoid danger from other vehicles.
- I.3.7 When a vehicle is parked, the parking brake shall be set.
- I.3.8 When a vehicle is left unattended, the motor shall be stopped, the ignition key removed and the parking brake set. A vehicle is considered unattended when the driver is more than 100 feet away from the vehicle or the driver's view of the vehicle is obstructed or impaired.
- I.3.9 When an occupied vehicle is parked with the engine running, the windows shall be left partially open so as to provide adequate ventilation to prevent asphyxiation from carbon monoxide.
- I.3.10 A vehicle's engine shall not be operated, except for brief periods, in an enclosed structure unless adequate ventilation is provided.

#### **I.4 Backing**

- I.4.1. If possible, the vehicle shall be positioned to avoid the necessity of backing later.
- I.4.2. Extreme caution shall be exercised when backing a vehicle, to avoid injury to persons and to prevent property damage. If another employee is present, he/she shall be stationed at the rear of the vehicle to assist the driver in backing the vehicle safely.
- I.4.3. When backing a vehicle which has an obstructed view to the rear,
  - a. a reverse signal (backup alarm) audible above the surrounding noise level shall be used; or
  - b. an observer shall signal that it is safe to back.
- I.4.4. During all backing operations, the vehicle operator shall:
  - a. Keep a constant lookout during the entire time.
  - b. Carefully check any blind areas.
  - c. Back slowly.
  - d. Watch both sides. Do not depend entirely on mirrors.
  - e. Enlist the aid of another person to act as a guide, when such help is available.

#### **I.5 Traffic Incident Procedure**

- I.5.1 Employees shall not become involved in an argument or discussion as to who was responsible for the incident.
- I.5.2 Employees shall not admit responsibility for an incident, offer to make any kind of settlement or sign any statements at the scene of an incident. Representatives of the company or the insurance company will handle this.
- I.5.3 These instructions shall be followed by an employee if involved in a traffic incident while on duty.

- a. **Stop.** Whenever a police investigation of the incident is indicated, do not move the vehicle until directed to do so by the police.
- b. Do not leave the scene of an incident without first stopping to identify yourself and to render assistance if needed.
- c. Assist injured persons insofar as you are able. Do not move seriously injured persons unless necessary for their protection against further injury. Report the incident to the police and inform them of any injuries.
- d. Flag-persons should be used if needed. Set flags or other traffic control devices if available and considered necessary.
- e. Obtain the name, address and license number of the other driver; the vehicle's license number; the names of the vehicle's owner and insurance company; names and addresses of witnesses and passengers in the other vehicle; and other information needed on the incident reporting form. (See *Forms*).
- f. When requested, give your name, address, company name, driver's license information and the name of the insurance company to the other party.
- g. If the incident involves damage to an unattended vehicle or a fixed object, take reasonable steps to locate and notify the owner. If the owner cannot be found, leave a notice in a conspicuous place on the vehicle.

#### **I.6 Operation of Trucks and Trailers**

- I.6.1 Local, state, federal or other regulations shall be complied with governing lights, markers, length, width and loading of vehicles. This includes regulations pertaining to explosives, flammable or combustible liquids or other hazardous materials.
- I.6.2 Before a truck or trailer is moved, it shall be carefully inspected to see that materials and equipment are properly loaded and secure so they will not cause a hazard by shifting.
- I.6.3 When transporting materials that could be scattered during operation (such as earth, gravel, refuse or similar loose material in an open truck), the material shall be covered with a tarpaulin or other approved covering.
- I.6.4 Trucks or trailers shall not be loaded in excess of their rated capacity.
- I.6.5 Material which extends more than four feet beyond the front or back of the truck or trailer shall have warning devices attached. During the day, red flags shall be used; at night and during periods of poor visibility, amber lights shall be used.
- I.6.6 Trailers, while being towed, shall be securely coupled to the

towing vehicle. Trailers (except those attached to a tractor by a "fifth wheel") shall be secured by safety chains or cables. Trailers equipped with braking systems shall be properly connected to the towing vehicle before moving.

- I.6.7** While a truck is being loaded by a high-lift, power shovel, crane or other loading equipment, the truck should be positioned so that the load does not pass over the driver. If a truck cannot be so positioned, the driver shall stand clear of the truck and loading equipment.
- I.6.8** Before a truck is loaded or unloaded, the brakes shall be securely set and the wheels shall be blocked or chocked.
- I.6.9** The capacity of booms, derricks or other hoisting equipment mounted on trucks shall not be exceeded.
- I.6.10** Heavily loaded trucks proceeding down steep grades shall be shifted into a lower gear.

## **I.7 Aerial Lift Trucks**

- I.7.1** A short daily inspection at the start of each shift shall be conducted to reveal maladjustments and unusual wear. The daily inspection should cover, but not be limited to, the following.
  - a.** All attachment welds between actuating cylinders and booms or pedestals.
  - b.** All pivot pins (for security of their locking devices).
  - c.** All exposed cables, sheaves and leveling devices (for both wear and security of attachment).
  - d.** Hydraulic system (for leaks and wear).
  - e.** Lubrication of boom.
  - f.** Boom and basket (for cracks or abrasions).
  - g.** Operation of boom from ground controls through one complete cycle. Listen for unusual noises and look for deviations from normal operation.
  - h.** Any other inspections recommended by the manufacturer.
  - i.** Defects found should be reported and corrected before they develop into dangerous conditions.
- I.7.2** Only authorized persons who are properly trained and qualified shall use or operate this equipment.
- I.7.3** The operating and maintenance instruction manuals issued by the manufacturer shall be read and followed.
- I.7.4** Load limits of the boom and basket shall not be exceeded. Shock loading (sudden stops or starts) of the equipment shall be avoided.
- I.7.5** Aerial lifts shall not be field-modified unless such modification is certified by the manufacturer. The insulated portion shall not be altered in any manner that might reduce its insulating value.

- I.7.6** Articulation-boom and extensible-boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Lower-level controls shall not be operated unless permission has been obtained from the employee in the lift, except in an emergency.
- I.7.7** The truck shall not be moved unless the boom is lowered, the basket cradled and secured and the outriggers retracted.
- I.7.8** Employees shall not ride in the bucket while the truck is traveling.  
**Exception:** Employee may ride in the basket for short moves at the work location if the basket is returned to the cradled position for each move.
- I.7.9** When employees are in the bucket of an aerial lift, the parking brake of the vehicle shall be set. Wheel chocks and outriggers shall be used to provide added protection. When the vehicle is on an incline, wheel chocks shall be used regardless of whether outriggers are used. The truck should sit approximately level when viewed from the rear.
- I.7.10** When outriggers are used, they shall be set on pads or a solid surface. Outriggers shall not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.
- I.7.11** When working from an aerial lift, employees shall wear a body harness, and a lanyard shall be attached to the boom.
- I.7.12** Employees shall not be permitted to transfer from a bucket to a pole or structure except with the permission of the supervisor.
- I.7.13** Safety rules governing the use of hot line tools, rubber goods, personal protective equipment and general safety practices shall also apply to work done from aerial baskets.
- I.7.14** When the boom must be maneuvered over a street or highway, necessary precautions shall be taken to avoid incidents with traffic and pedestrians.
- I.7.15** The operator shall always face in the direction in which the basket is moving and shall see that the path of the boom or basket is clear when it is being moved.
- I.7.16** Employees shall not stand or sit on the top or edge of the basket, or on ladders placed in the basket. Employee's feet shall remain on the floor while the employee is in the basket.
- I.7.17** When two employees are in the basket or baskets, one of them shall be designated to operate the controls. One employee shall give all signals, which shall be thoroughly understandable by all persons concerned.
- I.7.18** Climbers shall not be worn by employees while in the basket.
- I.7.19** When two employees are working from an aerial lift, extreme



care shall be taken to avoid one employee's contacting poles, crossarms or other grounded or live equipment while the second employee is working on equipment at a different potential.

- I.7.20** No more than one energized conductor or phase shall be worked on at one time.
- I.7.21** The aerial lift — together with the employees in the basket, and all tools and equipment — shall maintain proper clearances from unprotected energized conductors unless isolated or insulated. (See *Table D-1*.)
- I.7.22** When using pneumatic or hydraulic tools in a bucket, the operator shall be sure that hoses or lines do not become entangled in the operational controls.
- I.7.23** When working near energized lines or equipment, aerial lift trucks shall be barricaded and considered as energized equipment, or the aerial lift truck shall be insulated for the work being done. Unless they wear rubber protective equipment, employees on the ground must not approach the equipment if safe clearance is not maintained between the unprotected energized conductors or apparatus and conductive areas of the truck or its equipment. When safe clearance of uninsulated areas of the aerial lift cannot be maintained, the truck must be barricaded and considered as energized.
- I.7.24** Personal rubber protective equipment must be available off of the truck for use by employees working on the ground.

## **I.8 Radio Operations**

- I.8.1** The radio in company vehicles shall be monitored except where prohibited or impractical.
- I.8.2** In areas utilizing the Emergency Signal system, if the Emergency Signal is on, any transmission not directly related to the emergency is prohibited.
- I.8.3** In areas utilizing the Emergency Signal system, the radio should be monitored when the Emergency Signal is on.
- I.8.4** Radio transmissions within 1,000 feet of any rock-removal crew work site are prohibited without the consent of the rock-removal foreman.

## **I.9 Operation of Garages and Repair Shops**

- I.9.1** Garage and repair shops shall have adequate fire protection equipment.
- I.9.2** Smoking is prohibited in garages and vehicle repair shops.
- I.9.3** Cutting or welding is prohibited unless the work area is made fire-safe by removing combustibles or protecting combustibles from ignition sources.

- I.9.4** Gasoline and/or diesel fuel shall not be used for cleaning or degreasing purposes.
- I.9.5** Employees using chemicals shall be instructed in the proper use and of the potential hazards involved. Personal protective equipment shall be used when necessary (*see Chemicals and Harmful Substances*).
- I.9.6** Employees shall be instructed in the proper use of power tools, equipment, machinery and testing equipment before using (*see A.24 — Tools*).
- I.9.7** Compressed air shall not be used for cleaning purposes except where the pressure is reduced to less than 30 PSI — and then only when using effective chip-guarding and personal protective equipment.
- I.9.8** Air hoses shall be maintained in safe condition. They shall be returned to their rack, or be properly stored, after each use.
- I.9.9** Employees shall not use compressed air to clean dust or dirt from their clothing.
- I.9.10** A safety tire rack, cage or equivalent protection shall be provided and used when employees are inflating tires installed on multi-piece rims.
- I.9.11** Employees shall use a hose with sufficient length between the clip-on chock at the valve core and the in-line valve while inflating tires mounted on multi-piece rims to enable all persons to stand outside of the potential trajectory of the rim components should they come apart.
- I.9.12** Tires on single-piece-rim wheels shall be contained within a restraining device during inflation unless bolted on the vehicle with the lugnuts fully tightened.
- I.9.13** Adequate ventilation shall be provided for garages, repair shops and other enclosed areas to prevent the accumulation of vehicle fumes.
- I.9.14** Adequate machine guards shall be placed on equipment, where needed, to protect the operator and other employees from hazards.
- I.9.15** Employees shall use care to avoid being burned when removing pressurized radiator caps while a vehicle's engine is hot.
- I.9.16** Care shall be used by employees to prevent injury when lifting, moving and handling large parts or heavy tire assemblies.
- I.9.17** The manufacturer's rated capacity shall be legibly marked on jacks and shall not be exceeded. Jacks shall have a positive stop to prevent over-travel. When it is necessary to provide a firm foundation, the base of the jack shall be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block shall be placed between the cap and the load.

- I.9.18** When vehicles or equipment are raised for working underneath, they shall be adequately blocked or cribbed to prevent them from falling or shifting.
- I.9.19** Trucks with dump bodies shall be equipped with positive means of support, permanently attached and capable of being locked in position, to prevent accidental lowering of the body while maintenance or inspection work is being done.



## **J. Emergency Treatment**

### **J.1 *First Aid***

- J.1.1 Due to potential hazards associated with bloodborne pathogens that cause diseases such as hepatitis B and AIDS, care shall be taken, when administering any type of first aid, to limit or eliminate contact with blood and other potentially infectious materials.
- a. Use of gloves, eye protection, and CPR mask is recommended.
  - b. Employees shall wash hands and other exposed body areas with soap and water. If soap and water is not immediately available, a waterless anti-microbial waterless hand cleaner should be used until soap and water is available.
  - c. Remove all contaminated clothing immediately after exposure and immediately report all exposure to blood and other potentially infectious materials to their supervisors so post-exposure care can be initiated.
- J.1.2 Employees who are trained in first aid and CPR basics should provide emergency treatment to fellow employees. Personnel should be knowledgeable of the treatment for shock due to traumatic injury which includes the possibility of administering assisted ventilations and control of bleeding. Pre-planning for a potential emergency situation is most valuable. All employees should be aware of the medical services available and how to obtain them.
- J.1.3 Personnel engaged in overhead line work shall know the essential elements of pole-top rescue.
- J.1.4 Where first-aid kits are supplied, employees shall be familiar with the location, contents, and instructions given with the first-aid kit. Each employee shall learn to use this equipment so he/she can render treatment when needed. Except for minor injuries, the services of a physician shall be obtained. In the case of a more serious or life threatening event, call 911.
- J.1.5 The contents of first-aid kits shall be inspected each week and expended items replaced.

### **J.2 *Wounds and Control of Bleeding***

- J.2.1 A person can die from blood loss in a very short time — less than one minute. Therefore, in the event of an injury that results in significant bleeding, immediate steps must be taken to prevent the loss of blood.
- J.2.2 Bleeding may be controlled by the use of direct pressure applied to the wound with a clean dressing; elevating the extremity above the level of the heart will assist in controlling the bleeding. Secure the dressing in place with a bandage. There may be times when bleeding cannot be controlled with direct pressure and

elevation, and in those cases, the use of a tourniquet may be necessary.

**a. Applying a tourniquet**

1. The tourniquet material should be at least 2" in width.
2. The tourniquet should be applied above the wound, as close to the wound as possible.
3. The tourniquet should be tightened with the use of a windlass (stick or any other tool that can be twisted to draw the tourniquet tight).
4. When bleeding has been controlled, secure the windlass so that it does not loosen.
5. Write the letters *TK* on the patient's forehead with the time the tourniquet was applied.

**J.2.3** Shock can be present in all cases of serious bleeding. Attention must be given to the prompt treatment for shock.

**J.3 Shock**

**J.3.1** Shock usually occurs following a severe loss of blood or some type of serious injury. It can occur from a minor injury or even from anxiety or emotional stress. Regardless of the cause, the signs and symptoms are the same and similar treatment is required.

**J.3.2** Shock is easier to prevent than to cure. Every injured person is potentially a shock victim and should be treated as such — whether the signs and symptoms of shock are present or not.

**J.3.3** The following are signs and symptoms of shock.

- a.** Chalk-like appearance.
- b.** Dull or anxious expression.
- c.** Rapid or irregular breathing.
- d.** Weak or rapid pulse.
- e.** Cool, moist skin.

**J.3.4** Recommended treatment for shock includes the following.

- a.** The victim should be kept warm and comfortable, but not hot. In many cases, the only first-aid necessary and possible is to cover the victim, underneath as well as on top, to prevent loss of body heat. It is best not to move the victim at all.
- b.** Keep the victim's body horizontal or, if possible, position him/her so that the feet are at least six inches higher than the head. In any case, always keep the victim's head low. The single exception to this positioning is the case of a victim who obviously has an injury to the chest and has difficulty breathing — or if you suspect head, neck, or back injuries, or possible broken bones in the hips or legs. In this case, the victim should be kept horizontal.

- c.** Clear the victim's mouth of all foreign bodies and make sure he/she is breathing properly. Do not give the victim anything to eat or drink, even though he/she is likely to be thirsty. Call local emergency number immediately. Shock can't be managed effectively by first-aid alone. A victim of shock requires advanced medical care as soon as possible.
- d.** Loosen tight clothing at the neck, chest and waist.
- e.** Proper transportation is never more imperative than in the case of a person who may develop shock. It constitutes the most important single measure in the prevention and treatment of shock. Use an ambulance, if possible. If other means must be used, follow the above points as closely as possible.

**J.4 Eye Injuries**

**J.4.1 Foreign bodies**

- a.** When a small foreign body — such as dust or wood flake — is on the eye or eyelid, the eye should be irrigated with an eyewash station, eyewash solution, or clean water. Never attempt to remove any object off the surface of the eye with anything other than a gentle stream of water as this may cause permanent damage to the eye.
- b.** Objects in the eye must not be removed except by a physician. Both the eyes of the victim should be bandaged loosely and the person taken to the doctor immediately. The injured person should be instructed not to move the eyes.

**J.4.2** *Chemical burns, acid or caustic:* Immediately irrigate the eye with large quantities of clean water. Flushing of the eye should be continued for 20 minutes.

**J.4.3** All eye injuries — regardless of first-aid measures taken — should be taken to a physician to be checked, and applicable treatment administered.

**J.5 Cardiopulmonary Resuscitation (CPR)**

**J.5.1** Whenever a person is found unconscious, call 911 immediately, then check to determine if the person is breathing. If the victim is not breathing, immediately start CPR, and summon for an automated external defibrillator (AED) if one is available.

**J.5.2** In electric shock cases, do not rush in and become a victim. If possible, de-energize or isolate the power source. Move victim outside of the danger zone.

**J.5.3 CPR procedures**

- a.** Determine if the patient is unconscious by tapping and shouting, "Are you okay?" If the person is unconscious, call or have someone phone 9-1-1 and get an AED.

- b. If you do not have a cell phone or no one responds to your call for help, you can leave the person briefly to call 9-1-1.
- c. Determine if the victim is breathing or only gasping. Scan from the head to waist repeatedly for at least 5 seconds (but no longer than 10 seconds). If unconscious and not breathing adequately, this person needs CPR.
- d. Make sure the victim is lying on his/her back on a firm, flat surface. Begin CPR.
- e. Quickly remove clothes out of the way.
- f. Put the heel of one hand on the center of the chest (over the lower half of the breastbone). Put your hand on top of the first hand. Push straight down at least 2 inches. Push at a rate of 100 to 120 compressions per minute. Count the compressions out loud. Let the chest come back up to its normal position after each compression. Try not to interrupt compressions for more than 10 seconds, even when giving breaths. Provide 30 hard and fast compressions.
- g. Immediately open the airway by the head-tilt/chin-lift maneuver and provide two rescue breaths, watching for the chest to rise.
- h. Repeat sets of 30 compressions and 2 breaths for 5 cycles, or about 2 minutes. Repeat cycles of compressions and ventilations until EMS arrives or someone arrives with an AED.
- i. After performing CPR for two minutes, if an AED is present, start AED procedures.
- j. Turn the AED on and follow prompts. Attach the AED pads to the AED and attach to the victim's bare chest. Let the AED analyze the heart rhythm. If a shock is not needed, resume CPR. Deliver a shock if needed. Loudly state, "*clear*" and make sure that no one is touching the victim. Push the shock button to deliver the shock. Immediately resume CPR.
- k. Repeat cycle of CPR and shocks until EMS arrives on scene or victim becomes responsive.

## **J.6 Training**

- J.6.1 All employees engaged in electrical work shall receive training in resuscitation and in rescue from their working environment (poles, structures, manholes, boilers, aerial baskets, confined or enclosed spaces, etc.)

## **K. Telecommunications**

### **K.1 *Work Area Protection***

- K.1.1** Before work begins in the vicinity of vehicular or pedestrian traffic that may endanger employees, traffic warning signs, vehicle lights or other control devices shall be positioned to alert approaching traffic and used in accordance with the Telecommunications Traffic Safety Program.
- K.1.2** Employees exposed to vehicular traffic shall be provided with, and required to wear, Type III vests marked with, or made of, reflective, high-visibility materials.

### **K.2 *Communication Cable and Open-Wire Lines and Equipment***

- K.2.1** Electrical rubber gloves, rated for the specific voltage to be encountered, shall be worn when working on all wire lines or equipment above 50 VDC, unless the employee is adequately insulated from the ground and other conductors, or positively knows the line to be shorted and grounded. (This does not apply to communication equipment on the station side of telephone insulating transformers or other protection equipment on the communication terminal rack.)
- K.2.2** Power fuses shall not be removed or replaced except by the use of suitable insulated tools with electrical rubber gloves — rated for the specific voltage to be encountered — unless the fuse block is first entirely disconnected from the line or lines.

### **K.3 *Portable Power Equipment***

- K.3.1** All portable power equipment used in telecommunications work shall be grounded.
- K.3.2** Nominal 120V (or less) portable generators used for providing power at work locations do not require grounding if the output circuit is completely isolated from the frame of the unit.
- K.3.3** Grounding shall be omitted when using soldering irons, soldering guns or wire-wrap tools on telecommunication circuits.
- K.3.4** Portable lights, tools and appliances, when operated from commercial power, shall have their metal parts grounded unless these tools or appliances are double-insulated or are used with a GFCI. Double-insulated tools or appliances must be indicated on the manufacturer's label. When an extension cord is added, the cord shall be protected by a GFCI at the source/receptacle.
- K.3.5** When fueling portable, gasoline-driven generators, one shall:
  - a.** Allow the engine to cool before refueling.
  - b.** Wipe off any spilled oil or fuel on the equipment before use.
- K.3.6** Flammable liquids shall be properly stored in approved and clearly marked containers.

#### **K.4 Eye Protection**

- K.4.1** Microwave — Employees shall not look into an open waveguide which is connected to an energized source of microwave radiation.
- K.4.2** Fiber Optics — One shall not look:
  - a. into the beam of an operating laser diode or LED beam; or
  - b. into the end of an optical fiber at any time.

#### **K.5 Body Harnesses**

- K.5.1** A harness attached to a lanyard with a double-locking snap hook shall be worn while working from or riding in an aerial device. Lanyards shall be equipped with a double locking snap and shall be no longer than six feet.

#### **K.6 Hold Card; Lockout/Tagout**

*See Section A.23*

#### **K.7 Excavations/Trenching**

- K.7.1** Prior to excavation or trenching work, all existing underground utility installations — sewer, telephone, fuel, water and electrical, shall be identified and marked.
- K.7.2** All regulatory excavations/trenching safety work practices shall be followed.

#### **K.8 Microwave and Two-Way Radio Transmission**

- K.8.1** Accessible areas associated with microwave or two-way radio communication systems where the radio-frequency (RF) electromagnetic radiation level may exceed the recommended radiation protection limits shall have a warning sign posted.
- K.8.2** When an employee works in an area where the RF electromagnetic radiation exceeds the FCC maximum permissible exposure limits, measures shall be instituted that will insure that the employee's exposure is not greater than that permitted by the radiation limits. Such measures shall include — but not be limited to — those of an administrative or engineering nature, or those involving personal protective equipment.

#### **K.9 Use and Care of Rubber Goods**

- K.9.1** Electrical rubber goods — rated for the voltage levels to be encountered — shall be provided, and the supervisor shall ensure that they are used by employees as required by this section.
- K.9.2** Only qualified employees, or those under the continuous supervision of a qualified employee, shall work on or use test equipment on equipment energized at 50 volts or greater.
- K.9.3** Class 0 low-voltage gloves with leather protectors shall be worn when working on equipment or using test equipment that is energized at 50 to 600 volts.

- K.9.4** Electrical rubber gloves shall be subjected to an approved electrical test at intervals not to exceed 90 days.
- K.9.5** Electrical rubber gloves shall be inspected before each use for corona cracks or other damage, and shall be given an air test at least once a day while in use. This should be done at the beginning of the work period and at any other time when their condition is in doubt.
- K.9.6** Electrical rubber gloves shall never be worn inside out or without leather protectors. They shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of damage.
- K.9.7** Electrical rubber gloves shall not be used for purposes other than electrical work. Damaged gloves shall be returned to the Glove Lab.
- K.9.8** Leather protectors shall not be worn except when in use over the Class 0 electrical rubber gloves.
- K.9.9** Electrical rubber gloves, when not in use, shall be kept in canvas bags or other approved container that is designated and used exclusively for them. Gloves shall be stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored, nor shall other objects be placed upon them.
- K.9.10** Electrical rubber gloves shall be stored in a glove bag with the cuffs down to permit drainage and better ventilation, and to reduce the possibility of damage due to objects falling into the glove.

#### **K.10 Storage Batteries**

- K.10.1** Enclosed areas used to charge or store batteries shall be adequately ventilated. Report any defective ventilation equipment to your supervisor.
- K.10.2** Smoking and the use of open flames, cutting, welding and the use of tools that could produce sparks in enclosures that contain batteries shall be avoided.
- K.10.3** Precautions shall be taken to avoid shock or electric arc when working within battery charging areas.
- K.10.4** Whenever work must be performed in a location or position from which items such as tools and equipment may be accidentally dropped upon a storage battery, proper measures shall be taken to protect the battery before the work is started.

#### **K.11 Electrical Safety**

- K.11.1** Only trained and certified workers shall install, maintain or repair electrical equipment.

- K.11.2** Only qualified employees shall work in areas containing unguarded, uninsulated energized lines, or parts of equipment, operating at 50 volts or more.
- K.11.3** No qualified person shall come within four feet of an exposed, energized or conductive part unless:
  - a. the worker is properly insulated from the energized part with electrical gloves — rated for the voltage levels to be encountered — or other approved insulation; or
  - b. the energized part is properly insulated from the worker and any other conductive object; or
  - c. the worker is properly isolated and insulated from any other conductive object.
- K.11.4** Prior to conducting any electrical work, the worker shall de-energize the equipment and place the system in an “electrically safe work condition” according to energy isolation procedures (lockout/tagout).
- K.11.5** Where equipment cannot be de-energized, the requirements of the electrical safe work practices program shall be followed.

## **K.12 Powerline Carrier Tuner Maintenance**

- K.12.1** Prior to opening the tuner cabinet, examine the associated trap and coupling capacitor for physical damage. Ensure the cabinet is grounded.
- K.12.2** When opening the tuner cabinet, listen for arcing sounds that may indicate a problem. *See note under K.12.5.*
- K.12.3** Visually inspect the interior of the cabinet for damage.
- K.12.4** Close the ground switch during maintenance, or leave open for measurements or adjustments.
- K.12.5** Return ground switch to the open position to restore PLC to service.  
***Note:** If, at any time, an unsafe condition exists, stop work and report the trouble to your supervisor. See Safety Manual for appropriate PPE.*

## **K.13 Fiber Optics**

- K.13.1** Only qualified and authorized personnel shall cleave or splice fiber cable.
- K.13.2** Only approved eye protection with side-shields shall be worn to prevent loose fiber from entering the eyes.
- K.13.3** Bare fiber shall be handled with extreme caution and disposed of properly to reduce injury from sharp ends or loose scrap pieces.
- K.13.4** Employees shall avoid direct exposure to invisible laser radiation, which may emanate from unterminated fiber connections.

- K.13.5** Employees shall not look into ends of open fibers, unterminated fibers or the transmission parts of fiber equipment.
- K.13.6** Employees shall take necessary precautions when working with flammable or combustible cleaning agents used in fiber-optic splice preparation.

## **K.14 Contractor/Subcontractor Safety and Health**

- K.14.1** Contractors/subcontractors are responsible for providing their employees, and affected members of the public, a work site that is free from safety and health hazards.
- K.14.2** All contractors/subcontractors working at an LG&E/KU generating station site are required to attend the station’s site-specific training/orientation prior to engaging in work activities. In addition, they shall also undergo an ammonia-awareness training/orientation, where applicable, prior to conducting work.
- K.14.3** All contractors/subcontractors conducting work in a substation shall first complete a Substation Entry Training Program.
- K.14.4** All contractors/subcontractors shall comply with the LG&E and KU Contractor/Subcontractor Safety Policy.

## **K.15 Tent Heaters, Torches and Open Flame**

- K.15.1** Open flames shall not be used within ground tents or on platforms within aerial tents unless:
  - a. the tent covers are constructed of fire-resistant materials; and
  - b. ventilation is provided in order to maintain safe oxygen levels and avoid harmful buildup of combustible gases.

## **K.16 Tower Climbing**

- K.16.1** All tower or structure climbing shall be in accordance with the LG&E and KU Telecommunications Communications Structure Climbing Policy.
- K.16.2** Those workers who perform tower or elevated work shall be medically qualified, trained and certified as “Qualified” and have the appropriate equipment to perform those jobs.
- K.16.3** Prior to commencement of such work, a Health and Safety Management Plan and a Hazard Analysis shall be developed (see *Contractor/Subcontractor Safety Policy*).
- K.16.4** The supervisor, or person in charge, shall specify the fall-protection system to be used. He/she shall evaluate the physical condition of the climbers before allowing them to climb.
- K.16.5** All climbing and fall-protection equipment shall be inspected prior to each use. Defective equipment shall be immediately removed from service and tagged.
- K.16.6** All members of the work crew shall adhere to established fall-protection procedures and rules.

- K.16.7** Head protection shall be worn at all times on the job site, whether one is on the ground or climbing the tower. Hard hats shall be equipped with a chin strap when climbing.
- K.16.8** Steel-toed, reinforced-soled tower-climbing boots or shoes are recommended for tower climbers.
- K.16.9** Leather work gloves are recommended when climbing towers.
- K.16.10** Safety goggles or safety glasses shall be used when climbing.
- K.16.11** When climbing towers, workers shall wear suitable work clothes to offer protection from cuts and abrasions, weather conditions and tower structure hazards.
- K.16.12** Communication shall be maintained at all times between the climber and the ground personnel.
- K.16.13** Climbers shall wear a calibrated RF level monitoring device when working on a tower which may have active transmitters, or where the status of transmitters is unknown.
- K.16.14** During all climbing activities at least two qualified climbers shall be present on the job site.
- K.16.15** Climbing, moving, relocating, transitioning, and transferring activities performed on the tower require 100% attachment to an anchorage point.
- K.16.16** Only PPE certified by the manufacturer to meet all OSHA standards and regulations is authorized for use.
- K.16.17** All climbers shall have a current certification in first aid and CPR.
- K.16.18** Any climber who is ill and/or on medication which may inhibit actions or cause over-stimulation, dizziness, drowsiness, etc., shall not climb.
- K.16.19** Climbing shall not be conducted during adverse weather conditions.
- K.16.20** An emergency plan shall be established prior to each tower climbing assignment.





***No Compromise  
in Our House***



PPL companies



*Dear Employees,*

*LG&E and KU have an outstanding safety culture, a low-risk work environment and an excellent safety performance, which you and the employees before you have developed through discipline and determination. Safety at LG&E and KU is top-led and employee-driven. It is a professional skill set based on positive behaviors and an unwavering commitment to control hazards and prevent injuries – both on and off the job. As a result, the company is a recognized industry safety leader and source of best practices.*

*We are extremely proud of this position and your unwavering dedication to safety, which has been and always will be LG&E and KU's business priority and core value. To that end, we commit to you the support and leadership you need to maintain the highest level of safety performance. You will always have the unquestionable freedom and power to demand safe work conditions, control hazards and correct deficiencies on the job! There is nothing more important than your safety.*

*Your well-being and the continued success of the company's safety culture and business depend on you. Your safety behaviors and decisions prevent injuries and drive positive performance. This Guide to Safety Excellence provides the information that will support those efforts to sustain LG&E and KU's safety culture for future generations and to ensure your personal safety and that of others.*

*Sincerely,*

***The LG&E and KU Safety Governance Council***

## ***The LG&E and KU Safety Governance Council***

*The Safety Governance Council, comprised of six company officers, leads LG&E and KU's best-in-class safety culture and the ongoing efforts to sustain high levels of safety performance. The council's key responsibilities are to:*

- Support the company's top-led, employee-driven safety culture in which the front-line workers have the authority, responsibility and accountability to stop unsafe work and prevent injuries;
- Review all serious incidents, injuries and near misses/close calls;
- Provide a formal means to share best practices and information;
- Ensure optimum application of safety processes and elimination of process redundancies;
- Promote physical/emotional health as key safety factors;
- Ensure business partners comply with LG&E and KU's safety requirements; and
- Support new processes/initiatives to enhance safety performance.

### **Safety Council Working Group**

A working group supports the Safety Governance Council. It researches and evaluates internal safety topics and issues, and makes recommendations for the council to review and address.

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## ***Introduction***

*LG&E and KU's Guide to Safety Excellence provides an overview of safety behaviors, procedures and other tools that support the company's extraordinary safety culture and low-risk work environment. Some information may not be specific to your operating area. The general safety philosophy and practices, however, apply to all employees and serve as best practices for our business partners who are an integral part of our workforce and safety culture. This guide enables everyone to effectively and consistently manage safety together across the organization. It also supports LG&E and KU's position as an industry safety leader and our continuous effort to maintain superb safety performance.*

*The Guide to Safety Excellence complements LG&E and KU's Health and Safety Manual, which provides minimum-standard practices for employees to systematically use on the job. The *Health and Safety Manual* incorporates rules related to changes in conditions, equipment, procedures and OSHA requirements. The information supports job-planning activities, appropriate work practices and training, which help reduce injuries. The *Health and Safety Manual* can be found online at <http://intranet/BusAreas/Corporate/CorpHS/Documents/HS%20manual.pdf>.*

## ***Safety Vision***

*To be a world-class safety leader, supported by management leadership, employee participation and mutual responsibility.*

## ***Safety Mission***

*To ensure, without compromise, that safety excellence is the core expectation of business operations, and that management and employees are equally responsible and accountable for a low-risk work environment.*

## ***Principle Vision Points***

*These principle points are the essence of our mission and vision.*

**Excellence** – We want to be the *best* at safety. We will set the standard for others to follow and enhance our position among the top safety performers in the energy industry.

**Involvement** – We must involve all LG&E and KU employees, family members, business partners, customers and the general public in safety for incident prevention to be effective.

**Commitment** – We will demonstrate our commitment to safety by our behaviors and accountability for our actions.

**Continuous Improvement** – We recognize that status quo is not good enough and will continually pursue continuous improvement to sustain safety excellence.

**The Ultimate Goal** – We will continually strive for zero incidents.

## ***Safety Goals***

*LG&E and KU establish and achieve goals that enable the company to maintain its position as safety leader. They include, but are not limited to, the following.*

- 1.** Support LG&E and KU's mission of safety excellence.
- 2.** Strive for zero incidents.
- 3.** Ensure that safety remains LG&E and KU's core value and operating priority.
- 4.** Maintain a workforce that is technically competent and knowledgeable about safety and accepting of practices and hazard prevention on and off the job.
- 5.** Ensure that all employees and business partners use their authority to stop unsafe work practices.
- 6.** Provide technical training programs that incorporate processes and procedures to ensure employees are technically competent to perform their job safely.
- 7.** Ensure all employees are responsible and accountable for safety.
- 8.** Identify safety best practices across LG&E and KU, and share them internally and with other companies and constituents.
- 9.** Create and maintain the lowest-risk environment for employees, business partners and the public.

## ***Objectives***

*Objectives define in more detail how LG&E and KU will achieve safety goals. The primary objectives follow.*

- 1.** Ensure all employees have the authority to stop and correct unsafe work practices.
- 2.** Provide a constant information flow about on- and off-the-job safety through print and electronic communications, job briefings, tailgates, regular meetings and messages, and other channels.
- 3.** Foster employees' support of the safety culture through involvement.
- 4.** Conduct or support regular audits of work and safety practices to ensure management, employees and business partners adhere to internal and regulatory compliance standards and make adjustments in cases of noncompliance.
- 5.** Support public safety through proper work practices and procedures, liaison training, external and internal communications, demonstrations, and other methods coordinated by various LG&E and KU departments.
- 6.** Require that working safely be a condition of employment for employees and business partners.

## *Supporting Values*

*Values, or principles, are standards that guide and support our decisions and behaviors. When everyone in a group shares the same values, then a common alliance forms, such as a strong commitment to safety. These are among the key values that are essential to sustain LG&E and KU's culture of excellence.*

**Honesty and Openness** are critical when safety and lives are at stake. Hidden agendas, feelings of mistrust or other personnel issues must never compromise safety. Being honest and open enables individuals to freely share opinions, knowledge and information, and encourages others to listen to suggestions, give and receive constructive feedback and confront problems head-on.

**Courage** supports tough decisions, such as choosing *not* to perform unsafe work, despite pressures to do it. Courage also enables an employee to tell a co-worker to "stop" work because a situation or procedure is unsafe or the person is distracted.

**Respect** for one another is critical, particularly in an environment where there are many people with diverse backgrounds, views and experiences. It is important to respect all individuals and their ideas and to earn their trust.

**Integrity** means adhering to strong moral principles and being uncompromising and steadfast in that commitment. In this case, integrity means holding close to all values that support safe work, regardless of the situation.

**Responsibility and Accountability** mean each person is responsible for saying "no" to unsafe work, controlling hazards and preventing injuries, and also is accountable for those actions. This includes ensuring one's own safety and that of others.

**Ownership** of safety occurs when a person accepts full responsibility and accountability for it. Working safely then becomes a personal goal.



**Family** qualities positively reinforce safety behaviors. Family members care for and protect each other, and provide a sense of security and mutual support that are conducive to a robust safety culture. It is important to integrate new employees into the LG&E and KU family, so they will adopt and practice proper safety behaviors.

## ***Key Components of LG&E and KU's Safety Culture***

*LG&E and KU's safety culture is successful because of these key components, which employees should understand and support.*

- 1.** The key to our safety success is a top-led, employee-driven safety culture.
- 2.** The safety of employees, business partners, customers and the general public must always take precedence over any condition, circumstance or urgency of service.
- 3.** The most important part of any job is to make certain that employees and others around them do not get hurt.
- 4.** Safety is a competitive advantage tied directly to the bottom line.
- 5.** LG&E and KU's business is strong because safety excellence is a core value and operating priority.
- 6.** Consistent safety policies and guidelines must be maintained and new ones established to advance the culture.
- 7.** All employees must empower themselves and others to maintain and control safety performance.
- 8.** Safety policies must be clearly understood.
- 9.** Management commitment must be visible.
- 10.** The combined energy of the entire organization is required to ensure safety excellence.
- 11.** Line management and individual responsibility and accountability are critical for safe operations.
- 12.** Safety and technical training must be current and ongoing.
- 13.** Near misses/close calls and deficiencies must be addressed promptly.
- 14.** All incidents must be promptly and thoroughly investigated.
- 15.** All operating exposures should be eliminated or controlled.
- 16.** Safety audits must be conducted routinely and consistently.
- 17.** Working safely is a condition of employment.
- 18.** Employee involvement is essential at all levels.
- 19.** Off-the-job safety is important and should be communicated openly and frequently.

## ***Safety Core Elements***

*LG&E and KU's core elements, or fundamental safety practices, are the foundation on which the company's safety culture is built. Work groups have different functions and safety practices, but these fundamentals are the same for all, regardless of the nature of the work. They ensure consistent approaches to safety and tracking and measurement of progress. The relentless repetition of these core elements also engrains safety as a natural behavior by which employees work and live. These core elements should by no means limit other safety considerations related to any group.*

- 1. Hazard Assessment and Mitigation** – Aggressively identify, assess and mitigate hazards of all types before they cause injuries.
- 2. Incident Investigation and Reporting** – Perform a root-cause analysis and meaningful investigation and report after the failure of any safety or health control that results in an incident or a near miss/close call.
- 3. Employee Involvement** – Capitalize on the company's most valuable resource – employees – by actively creating and facilitating opportunities to become involved in loss-prevention efforts.
- 4. Job Briefings** – Ensure that employees participate in a job briefing prior to the start of any work related to natural gas or electric operations.
- 5. Compliance** – Ensure that all business areas and employees comply with local, state and federal regulatory requirements.
- 6. Vehicle Incident Prevention** – Ensure employees have the resources, skills and knowledge necessary to drive safely and defensively in order to reduce the number of vehicle incidents.
- 7. Business Partner Relationships** – Foster better communication and closer working relationships between employees and business partners to strengthen LG&E and KU's safety culture.

- 8. Near-Miss/Close-Call Reporting** – Report all incidents that could have potentially resulted in injury, so hazards can be addressed to prevent similar incidents in the future.
- 9. Empowerment** – Seize the freedom, responsibility and accountability for controlling and correcting unsafe work without repercussions.
- 10. Communication** – Foster reciprocal communications that will support safe work habits and a hazard-free environment.
- 11. Leadership** – Demonstrate the courage and knowledge to correct unsafe actions, ensure the safety and well-being of co-workers, and promote safety as the most important thing we do.
- 12. Health and Wellness** – Actively pursue opportunities to meaningfully incorporate health and wellness as a component of safety.

### **More on Health and Wellness**

Health and wellness are an important, but often over-looked aspect of safety. Employees who are physically, emotionally and mentally fit have fewer injuries and higher morale.

A wellness issue of any type can be a distraction, and a distraction is a tangible hazard that causes injuries. Physical ailments can prevent individuals from working safely such as lifting properly, climbing ladders or hearing or seeing well. They also can lead to restrictions mandated by safety regulations, such as not being able to drive a commercial vehicle with high blood pressure. Emotional or mental challenges, even temporary ones caused by personal challenges, such as divorce or a family member's death, can be detrimental to safe work as well.

LG&E and KU's integrated approach to safety and wellness promotes overall employee health and prevents workplace injuries and illnesses.

## ***Safety Leadership***

*Strong leaders with unwavering commitment to safety are the glue that binds our culture. Anyone can be a safety leader, or champion, regardless of the person's position or responsibility. When lives are at stake, though, this role is critical and requires professional skill, communication, trust and dedication to do more than enforce safety rules and regulations.*

*Employees are conditioned to work safely through positive reinforcement from their co-workers and especially their managers and front-line leaders. A safety leader must establish credibility, gain trust and positively influence behaviors and attitudes. True leaders consistently demonstrate the following characteristics and behaviors and hold strong to LG&E and KU's safety values.*

### **Characteristics**

**Commitment.** Dedication to safety should be unwavering, despite the circumstances, and evident in both actions and words. Set the example.

**Courage.** Courage is critical because circumstances, pressures or people can make standing up for safety challenging.

**Confidence.** Demonstrate confidence in all decisions and actions pertaining to safety. Do so without reservation because you always have management's support to put safety first.

**Sincere concern.** If you sincerely care about your co-workers, they will recognize it, respect you and follow your lead on safety. People will detect ingenuous concern. At LG&E and KU, safety is more than just "making the numbers." It is about caring for the well-being of others.

**Adaptability.** Change is constant in the energy business. You must be able to adapt to and recover from those that impact safety and react to concerns and suggestions.

**Acceptance.** Listen to and, when practical, accept what employees tell you about safety concerns.

## **Behaviors**

*These characteristics are meaningless, unless you demonstrate certain behaviors that will positively influence other employees.*

**1. Promote LG&E and KU's safety vision.** Our vision is simply to sustain safety excellence. When employees know and understand the vision, they will strive for it.

**2. Continuously reinforce safety fundamentals (the core elements).** Relentless repetition, review and follow-up will keep the fundamentals top of mind at all times.

**3. Say "no" to unsafe work.** Use, reinforce and support the authority to stop unsafe work, and seek actions to correct deficiencies.

**4. Ensure employees understand they have management support.** Employees can make critical safety decisions without repercussion with full support from management.

**5. Value employees as people, not just as assets.** They are co-workers and have families, friends and feelings. Always remember that "human side" when addressing safety issues.

**6. Involve employees in safety.** If you are in management, remember that front-line employees face job hazards first hand. Use their knowledge and experience to address issues and risks, and prevent injuries.

**7. Communicate continuously.** Constant communication is critical to keep safety at the top of everyone's mind. Use multiple means to deliver messages, and keep them fresh and interesting. Include business partners to ensure they have the same information and performance expectations.

**8. Prepare for complacency.** Safety success is cyclical. Sometimes, following periods

of outstanding performance, employees become complacent, causing incidents to occur. Keep your team focused, regardless of how well they perform.

**9. Engage safety champions.** They have a natural passion for safety, are respected by others and will drive your group's performance.

**10. Measure success by behavior.** Establish goals, performance measures and other metrics to track progress. However, let behaviors, not numbers, determine positive safety results.

**11. Focus on improving behavior.** Enlist positive behavioral changes by encouraging employees to be responsible and accountable for controlling hazards and injuries.

**12. Be proactive.** Do not take any new situations or changes in the work environment for granted. Constantly look for hazards, and prepare to address them.

**13. Be visible.** When you are visible and interested in the well-being of others, they will perform more safely. Strong safety leaders do not lead from behind the scenes.

**14. Mentor new employees.** Transferring safety behaviors, knowledge and experience is critical to sustain positive performance. Everyone is responsible for integrating new employees into our safety culture.

## ***Management-Specific Responsibilities***

*An effective safety leader in a management role should also demonstrate these behaviors.*

- Ensure employees are properly trained and they follow policies and procedures;
- Lead by example;
- Correct unsafe or unhealthy acts promptly;
- Encourage and implement suggestions to improve the work environment and employee participation in safety; and
- Investigate all injuries, occupational illnesses and property damage incidents.

To learn more about how to hone your leadership skills, complete these brief modules, which are available for self-instruction in CourseMill. Contact your safety specialist if you need assistance.

<b>1. Safety Tool Management</b>	<b>SALD01</b>
<b>2. Incident Management</b>	<b>SALD02</b>
<b>3. Regulatory Management</b>	<b>SALD03</b>
<b>4. People Management</b>	<b>SALD04</b>



## ***Safety Responsibilities by Position***

*Safety at LG&E and KU is the responsibility of all employees and business partners, who have the freedom, authority and obligation to prevent safety deficiencies, stop unsafe work and demand that proper procedures are in place.*

*There are some specific safety responsibilities, though, that must be delegated to individuals based on their positions within the organization. For example, senior management's role is to provide leadership and steadfast safety support throughout the entire company. This is consistent with LG&E and KU's top-led employee-driven safety culture.*

When designating safety responsibilities, it is important to ensure the person has:

- Sufficient authority to perform the assigned actions; and
- The ability to implement those actions based on training, evaluations, decision-making capabilities and people-management skills.

Following are recommended safety responsibilities by position.

**Safety managers and staff** are responsible for:

- Advising management about the effective means to establish, monitor and improve workplace safety;
- Providing department and facility managers with resources and information covering their responsibilities;
- Providing management with regulatory requirements and issues and potential solutions;
- Developing programs, record-keeping, training, and auditing and inspection procedures and documents;
- Coordinating and auditing safety initiatives;
- Providing procedures for job-hazard analysis; and
- Promoting safety awareness.

**Department and facility managers** are responsible for:

- Implementing actions that correspond to their safety initiatives and hazard prevention;
- Providing adequate and effective training;
- Investigating incidents;
- Providing required personal protective equipment;
- Evaluating supervisor performance;
- Inspecting facilities periodically;
- Involving all employees in safety;
- Correcting specific audit and inspection discrepancies; and
- Overseeing safety record-keeping.

**Supervisors** are responsible for:

- Monitoring and enforcing safety procedures;
- Immediately correcting unsafe acts or conditions;
- Providing job-specific safety training;
- Overseeing the initial investigation of incidents;
- Ensuring equipment and tools are in safe working condition; and
- Checking work areas for safety.

**Safety committee and focus group** members are responsible for:

- Being a resource asset to managers, supervisors and co-workers;
- Providing job-specific safety recommendations; and
- Assisting with workplace inspections.

**Employees** are responsible for:

- Following safety rules and procedures;
- Stopping and reporting unsafe acts or conditions;
- Safely operating equipment and tools for which they have been trained and are specifically authorized to use;
- Reporting immediately incidents, injuries, illnesses or near misses/close calls; and
- Helping ensure the safety of co-workers.

## ***Business Partner Relationships***

*Contractors are our business partners and an integral part of the workforce. For our safety culture and LG&E and KU as a whole to be successful, we must have positive relationships with contractors and ensure they value safety as much as our employees. Contractors manage their own safety programs and cultures. However, LG&E and KU have an aggressive performance-based safety-management process, which ensures contractors fulfill the company's safety expectations. It includes these main components:*

- Certification, which assesses the contractor's safety history;
- Safety-related contract documentation;
- A review of the contractor's safety program;
- High-level communication between the company and the contractor;
- Ongoing reporting and review of the contractor's safety statistics (incident rates);
- Verification of training programs and documentation that all employees are properly trained to control the hazards to which they will be exposed;
- Periodic safety reviews;
- The Contractor Passport Program, which includes training of contractors' employees, who receive identification cards to document completion of training;
- A database that contains information on safety training, performance statistics and comments from LG&E and KU personnel about contractor performance;
- A job-performance monitoring tool that provides a consistent, structured means of documenting contractor safety performance to identify and correct problems and note positive performance; and
- A job-closure form that documents a job is finished or to note additional work that needs to be completed.

## **Contractor Management Standards**

To ensure contractors maintain and/or improve safety performance and meet LG&E and KU's work expectations, they must:

- Submit time-activated action plans relating to serious injuries or incidents;

- Conduct detailed investigations on serious near misses/close calls and recordable injuries;
- Perform formal and timely internal audits;
- Aggressively involve project managers and leaders and educate them about the contractor safety-management process;
- Hold regular meetings with their employee to discuss safety topics;
- Complete a job hazard analysis to ensure that LG&E and KU and the contractor agree on the job risks and the tools, processes and equipment to be used during the work; and
- Submit a job hazard mitigation plan to ensure the company agrees on the plan to mitigate the risks before work begins.

### **Ongoing Evaluation**

LG&E and KU safety specialists, management and contract proponents evaluate contractor performance on an ongoing basis and monitor effectiveness in a number of areas. Some of these are:

- Communication, including conducting safety meetings and job briefings;
- Compliance, including OSHA and company programs, equipment, inspections, etc.;
- Meeting or exceeding safety rules specific to regulatory requirements;
- Personal protective equipment (PPE), including having the right PPE and using it properly; and
- Monthly injury and illness statistical reporting.

## ***Roles of Local Safety Committees and Focus Groups***

*Local safety committees and focus groups are invaluable in managing safety, and they serve as important liaisons to the Safety team. Each should consist of an appropriate number of volunteer management, hourly and nonexempt employees. Except for the chairperson, members should rotate annually. Safety committees should be advisory in nature, and their responsibilities should include the following.*

- Assist management and employees in conducting committee meetings that promote responsibility, accountability and safety goals that establish a best-in-class safety culture within each business area.
- Enhance employee involvement in and ownership of safety by conducting quality safety meetings that offer training, compliance reporting, and information supported by the Safety team.
- Communicate between first-line management and employees about issues and concerns that pertain to their work groups and affect safety performance.
- Ensure site safety by conducting formal and informal audits and providing written and electronic communication that reinforce safety as the priority.
- Develop interaction between employees and Safety and Technical Training Department to enhance knowledge, commitment and adherence to safety procedures and policies.
- Provide input about incidents, close calls and near misses.

## ***Regulatory Compliance***

*Properly and effectively managing compliance with regulations, timely reporting of incidents and interacting professionally with regulators are critical responsibilities. Do not take these for granted. It is important to be familiar with regulatory agencies; know the processes and procedures that apply to your job; and fully comply with them for your personal safety and the company's position with the agencies.*

If you are in a supervisory or management position, knowing the regulatory process for incident reporting and management is the law! According to the National Electric Safety Code, Section 42, Rule 421.A, a first-level supervisor or person in charge must:

- Adopt such precautions that are within the individual's authority to prevent accidents; and
- Ensure that safety rules and operating procedures are observed by the employees under the direction of this individual.

You should become familiar with some of the key agencies and rules:

- The Kentucky Public Service Commission – KPSC
  - General Rule 807 KAR 5.006 Electric and
  - General Rule 807 KAR 5.027 – Gas, which designate reporting procedures
- U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration
  - 49 CFR Part 191 – Incident Reporting
  - 49 CFR Part 199 – PHMSA Drug and Alcohol Testing Regulation
  - 49 CFR Part 40 – DOT Drug and Alcohol Testing Regulation
- Indiana Public Service Commission
- The Occupational Safety and Health Administration – OSHA
- The Environmental Protection Agency – EPA
- The Federal Motor Carrier Safety Administration – FMCSA

Failure to properly enforce regulations and requirements in a timely manner can have far-reaching negative ramifications for you and the company. Some are:

- Injuries and even death;

- Investigations that otherwise could be avoided;
- Damage to customers' property;
- Out-of-service or damaged equipment, which can lead to service interruptions;
- Substantial fines for LG&E and KU; and
- A negative public image for the company.

If you are in doubt about how to handle an incident, talk to your safety specialist. Supervisory and management personnel also should refer to LG&E and KU's *Internal Notification and Emergency Response Guide* to ensure the proper incident notifications are made and that the process meets the requirements of the regulatory agency or agencies.

## ***Sources of Injuries***

*Information about the types and sources of injury help to control hazards and prevent injuries and are a key component of an effective hazard assessment and mitigation plan.*

The Bureau of Labor Statistics Supplementary Data shows that in the utility industry the three major sources of injury are overexertion, falls and being struck by or against an object. This data shows sprains/strains, cuts/lacerations and contusions/bruises are the most frequent injuries encountered in the electric services industry. Contact with electric current is the leading cause of fatalities.

Current National Safety Council statistics show that overexertion injuries are the leading type of accidents among natural gas utilities; highway injury is the leading cause of fatalities.

Historically, strains, sprains and cuts are the leading types of injury at LG&E and KU, and hands, legs and head are the most common body parts injured. Consequently, we should concentrate on proper PPE use, hand placement and safe practices when using tools and equipment to reduce these types of injuries. We also must focus on reducing strains and sprains, which correspond to the number of back and torso injuries and slips and falls experienced.



## ***Hearing-Loss Control***

*Work-related hearing loss is one of the most common occupational hazards in the United States – and at LG&E and KU. Millions of persons are exposed to hazardous noise on the job and away from work, resulting in permanent hearing loss if prevention is ignored. Consequently, a key company safety initiative is to protect employees against potential hearing loss from exposures both on and off the job.*

Damage usually happens gradually when there is prolonged exposure to a loud sound, which is measured in decibels. For example, a typical conversation takes place at about 60 decibels. A woodshop noise level is about 100 decibels, and a chainsaw noise measures about 110 decibels. Prolonged exposure to noise above 85 decibels can cause hearing loss. A short, intense sound, such as an explosion, may cause immediate hearing loss. Over time, sounds may simply become muffled or distorted. Tinnitus, a ringing or roaring sound, is sometimes described as the sound of crickets in one or both ears and can accompany both immediate and gradual hearing loss.

To that end, adjustments sometimes can be made to the work environment to reduce noisy equipment. Engineering or administrative controls or ear plugs and other protection devices may eliminate the exposure to hazardous noise. Once exposure is reduced with protection, the hearing loss will not grow worse. Earplugs are available to all LG&E and KU employees to use at work and off the job. To be effective, hearing protection must be worn regularly and be properly fitted.

## ***Incident Types and Rates***

*Occupational Safety and Health Administration (OSHA) recordkeeping regulations require most employers to prepare and maintain records of serious occupational injuries and illnesses. This information is important for employers, workers and OSHA to evaluate workplace safety, understand industry hazards and implement worker protection to reduce and eliminate hazards.*

### **Injury or Illness Incident Case Rates**

Many companies use the number of recordable injury and illness cases (per OSHA guidelines) and the number of hours worked during a year as a measure of safety performance. To compare the number of cases experienced to peers or companies in other industries, a rate is calculated using 200,000 work hours, which represents a "model" company with 100 full-time employees.

### **Recordable Injury and Illness Rate (RIIR)**

Generally, a recordable injury or illness case under OSHA is one that requires medical treatment beyond first aid or one that causes death, days away from work, restricted work, transfer to another job, or loss of consciousness. The formula used to calculate this rate is:

$$\frac{\text{Number of recordable incidents} \times 200,000}{\text{Number of hours worked}}$$

### **Lost-Work Day Case Rate (LWDCR)**

This incident rate measures cases where the employee was off for days away from work. Job transfers or job restrictions are not included in this calculation. This rate looks at cases where a person *could not* return to work. The formula used to calculate this rate is the same as for the RIIR with the number of lost-workday cases replacing the number of recordable incidents. The formula used to calculate this rate is:

$$\frac{\text{Number of lost-workday incidents} \times 200,000}{\text{Number of hours worked}}$$

### **Days Away From Work, On Restriction or On-Job Transfer Case Rate (DART)**

This incident rate measures cases with days away from work, job transfers or job restrictions. Job transfers or job restrictions indicate that an employee could return to work, but was not able to complete a shift or perform normal job duties. A fatality would be included in this rate only if the injured person had met the criteria for LWDR prior to death. The formula used to calculate this rate is the same as the RIIR with the number of lost-workday cases, plus the number of days with restriction or job transfer replacing the number of recordable incidents. The formula used to calculate this rate is:

$$\frac{\text{Number of cases involving days away from work, on-the-job transfer and restricted duty} \times 200,000}{\text{Number of hours worked}}$$

### **Severity Rate**

This rate measures the seriousness of illnesses and injuries. The most common calculation uses the number of days away from work as a measure of an incident's severity. The theory behind the calculation is that the longer an employee is absent, the more severe the incident. OSHA sets a limit of 180 days as the maximum reportable number of days for recordkeeping purposes. Since an employee involved in a fatality cannot return to work, employers are not required to include fatalities in the calculations of severity ratings. The severity rate uses the following formula:

$$\frac{\text{Number of days away, on-the-job transfer and restricted duty} \times 200,000}{\text{Number of hours worked}}$$

### **Experience Modification Rate (EMR)**

The Experience Modification Rate (EMR) is a number used by insurance companies to gauge both past cost of injuries and future chances of risk. The lower the EMR of a business, the lower the worker compensation insurance premiums will be. An EMR of 1.0 is considered the industry average.

A figure greater than 1.0 would mean the company had experienced worse-than-expected losses during a period and the opposite would apply to a figure less than 1.0. All insurance carriers are required to submit their data for each employer they insure on an annual basis. LG&E and KU look closely at the EMRs of its potential business partners in evaluating their ability to meet the companies' safety expectations. When comparing EMR's for different companies, it is important to compare those that perform similar work.

### **Motor Vehicle Incident Rate (MVIR)**

This is the incident rate for measuring controllable motor vehicle incidents. Controllable vehicle incidents are those incidents that result from some action or lack of by the operator of a motor vehicle. The rate is the frequency of incidents per one million miles driven. The MVIR is calculated using the following formula:

$$\frac{\text{Number of controllable motor vehicle incidents} \times 1,000,000}{\text{Number of miles driven}}$$

## ***Levels of Hazards***

*Safe behavior is much more than just following the rules and processes. A person also must focus on the environment and the situation at hand, in addition to understanding that rules exist to provide protection from hazards. There are endless numbers and types of hazards in the work environment that can be managed with the proper mindset, timing and proper behavior, which determine whether or not the situation leads to an injury. There also are different levels of hazards that fall into a critical danger zone.*

### **Critical Danger Zones**

A critical danger zone is present when there is a hazardous situation, condition or action that can potentially lead to an immediate and serious injury, a major loss of equipment, or significantly impact a process or the environment. For example, an employee is in a critical danger zone the moment before he or she prepares to connect an electric or gas line, climb a pole, move heavy equipment, enter a disgruntled customer's property or pull out in the passing lane before a speeding vehicle. The action the person takes at that moment determines what happens next. A critical danger zone can be created by an obvious or hidden hazard.

### **Obvious Hazards**

Hazards surround us everywhere. Many we recognize as obvious issues, but do not consider them to be immediate or serious threats. They are manageable with the right safety behavior, processes and tools, or by changing the situation so the hazard doesn't exist.

### **Hidden Hazards**

Hidden hazards are those which are unseen or unexpected. These can be the most dangerous because predicting and/or preparing for them is difficult. It is possible to control hidden hazards by being alert and prepared to react to any situation.

## ***Hazard Management***

*Regardless of the type or level of a hazard, all can be managed by employing the right behaviors, processes and tools. Following are guideline for hazard control.*

- 1. Stay alert and focused.** Clear your mind. Push aside any thoughts that might distract you from safely and correctly performing the task at hand.
- 2. Plan ahead.** Mentally and physically prepare to perform the task correctly and determine how you will control the hazards.
- 3. Be on guard.** Expect the unexpected; be prepared to handle uncontrolled risks.
- 4. Stick with the job you started.** Do not start a job, and then stop to do something unrelated such as converse with a co-worker or start another task.
- 5. Take a break.** Repetition and fatigue can affect concentration. When you find yourself losing focus, back off from the task.
- 6. Watch your co-workers.** Are they doing something that could injure you or themselves?
- 7. Don't take anything for granted.** There are always hazards in every situation and environment.
- 8. Self-Check.** Challenge preconceptions about what is safe and unsafe. Do not rationalize why you should do a task, when things "don't seem right."
- 9. Communicate.** Provide information about a project or situation to all parties involved, and ensure you are well-informed as well. Make sure the facts are clear, concise and accurate, and the message you send is the message others receive.
- 10. Follow a structured process.** Do not skip, duplicate or only partially complete steps for a job or task

- 11. Peer check.** Work with a co-worker to prevent an error by the performer.
- 12. Conduct a thorough, quality job briefing.** Include all employees involved in the job and discuss the work scope, individual roles, potential hazards and controls, work procedures, required personal protective equipment, and energy-source controls, including lock out/tag out and grounding. Read instructions. Inspect the job site. Identify changing or abnormal working conditions.
- 13. Manage distractions.** Distractions cause injuries, and they can result from multiple factors, including thoughts of personal activities, deadlines, unclear communication, multi-tasking, peer pressure, stress, physical environment, overconfidence, change or complacency.
- 14. Stop unsafe work.** If you feel the job is unsafe, you are not prepared or you are distracted. Notify a supervisor or team leader. Resolve the issue before proceeding.
- 15. Demonstrate personal accountability.** Show an attitude of personal ownership of safety, and work to enhance your safety behaviors and those of others.

## ***Incident Management: Investigations and Reports***

*Prompt, thorough and systematic incident investigations and reports promote safe work practices and ensure LG&E and KU meet strict regulatory requirements. They also ensure proper incident analysis, prevention, reporting and record-keeping.*

The purpose of an investigation is to discover the direct and indirect causes of incidents and ways to prevent similar ones from occurring in the future. Incident investigations also can improve employee morale and promote a positive company image concerning safety.

Proper incident management, however, is complex and sensitive. All employees are responsible for understanding and following the proper company procedures and local, state and federal regulations for incident management and reporting. These are the key points to remember are:

1. Focus on the person involved in the incident first! Remove hazards that could endanger the individual, and ensure he or she receives proper treatment.
2. Report all employee, contractor, public and motor vehicle incidents, no matter how insignificant they seem. An employee should notify his or her supervisor immediately, so notice can be forwarded to management.
3. Ensure the equipment, systems and surrounding environment are protected and in a safe state.
4. Immediately communicate an incident through the proper chains of command to determine the most prudent response. The responsible manager should determine who to notify.
5. Do not share information in ***any way*** with anyone outside the company.
6. If a situation involves inquiries by news media, contact Corporate Communications at extension 2911. Do not attempt to address questions.



If you are in a supervisory or management role, follow these guidelines:

1. Ensure you follow all regulatory and company requirements, including drug and alcohol testing.
2. Handle site security, interviews and evidence collection professionally.
3. Investigate all incidents thoroughly and find the root cause.
4. Initiate all incident investigations in a timely manner, which depends on the nature of the incident. The level of investigation and the departments and persons involved will depend on the severity of the incident. Refer to LG&E and KU's *Internal Notification/Emergency Response Guide* to ensure you follow the proper procedures.
5. Complete all applicable reporting forms and send them to the appropriate personnel to ensure accurate investigation and documentation. The IA1 (First Report of Injury Form) must be sent within 24 hours after the incident to the Safety and Technical Training Department and to the appropriate internal departments and external delegates.
6. Provide a report of the final findings and recommendations to the operations manager, who should evaluate the appropriate actions to take.
7. Track accepted recommendations to completion.
8. Monthly reports should be created to keep the facility manager aware of the progress.
9. Lessons learned from the incident should be shared with other managers.

## ***Incident Reporting: Record-Keeping Guidelines***

*Incident-reporting requirements apply in some respect to all company employees, on-site vendors, contractors and visitors. All incidents and related events resulting in an injury or causing illness to employees must be reported and recorded in order to:*

- Establish a written record of contributing factors and occurrences (near misses/close calls) as well as property and vehicle damage;
- Ensure that incidents are promptly investigated to initiate and support corrective and/or preventative action;
- Provide statistical information for use in analyzing all phases of the incidents and events; and
- Provide the means to comply with the reporting requirements for occupational injuries and illnesses.

### **Responsibilities**

All LG&E and KU employees should follow their assigned reporting requirements.

#### **Safety Personnel**

- Ensure proper record entry, maintenance and release procedures; and
- Conduct random audits.

#### **Managers**

- Follow established LG&E and KU guidelines;
- Establish and maintain effective record-keeping processes, including security controls over sensitive medical and exposure records; and
- Train all employees in incident-reporting procedures.

#### **Supervisors**

- Comply with all LG&E and KU requirements for incident reporting.

#### **Employees**

- Comply with the incident-reporting procedures that state injuries, no matter how slight, will be properly treated and reported to the person in charge as soon as it is practical to do so.

## ***General Recording Criteria***

*Injuries and occupational illnesses must be documented and to help measure LG&E and KU's safety performance. Cases that require recording are:*

- Death;
- Days away from work;
- Restricted work;
- Transfer to another job;
- Medical treatment beyond first aid;
- Loss of consciousness; and
- Significant injury or illness diagnosed by a physician or other licensed health-care professional.

## **Medical Treatment**

Medical treatment is the management and care of a patient in order to combat an injury, disease or disorder. Medical treatment does not include:

- Visits to a physician or other licensed health care professional solely for observation or counseling;
- Diagnostic procedures, such as X-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes; and
- First aid.

For record-keeping, first aid means only the following:

- Using a nonprescription medication at nonprescription strength. (However, for medications available in both prescription and nonprescription forms, a recommendation by a physician or other licensed health care professional to use a nonprescription medication at prescription strength is considered medical treatment for record-keeping purposes.)
- Administering tetanus immunizations. (Other immunizations, such as hepatitis B vaccine or rabies vaccine, are considered medical treatment.)

- Cleaning, flushing or soaking wounds on the surface of the skin.
- Using wound coverings, such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™. (Other wound-closing devices, such as sutures, staples, etc., are considered medical treatment.)
- Using hot or cold therapy.
- Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (Devices with rigid stays, or other systems designed to immobilize parts of the body, are considered medical treatment for record-keeping purposes.)
- Using temporary immobilization devices (splints, slings, neck collars, back boards, etc.) while transporting an accident victim.
- Drilling a fingernail or toenail to relieve pressure or draining fluid from a blister.
- Using eye patches. Removing foreign bodies from the eye, using only irrigation or a cotton swab.
- Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means.
- Using finger guards.
- Using massages. (Physical therapy or chiropractic treatment is considered medical treatment for record-keeping purposes).
- Drinking fluids for relief of heat stress.

### **Injury and Illness Summary**

An injury and illness summary must be completed and posted from February 1 to April 30 of the year following an incident. Post a copy of the summary in each facility in a conspicuous place or places where notices to employees are customarily posted. Ensure that the summary is not altered, defaced or covered by other material. OSHA requires the summary to be on file for five years at the facility where it is posted.

## **Safety Meetings**

*Regular safety meetings promote positive behavior through two-way communication, hazard awareness and sharing of ideas and information, such as safe-work procedures and compliance regulations.*

The value of these meetings depends on the level of employee involvement and management visibility. Line management is responsible for conducting quality safety meetings and ensuring employee participation. Supervisors should demonstrate their commitment to safety and promote positive attitudes and behaviors during these meetings. Safety committees and focus groups should help facilitate the meetings and identify the concerns and responsibilities of their work groups. Members of the Safety team can provide resource materials for safety meeting programs.

### **Meeting Guidelines**

When practical, safety meetings should be conducted at the beginning of each work week. Attendance should be monitored to ensure employee participation in a minimum of three weekly safety meetings per month. Employees who work alone or have no reporting responsibilities can fulfill this guideline through reference materials or at supervisory discretion. These employees should report to their supervisors the awareness actions they take.

In addition to weekly safety meetings, managers should hold regular and timely informational meetings with employees to review safety statistics and issues and to refocus on goal-setting action plans. Meeting minutes should be taken and retained for documentation and analytical purposes.

## ***Health and Safety Manual***

*The LG&E and KU Health and Safety Manual provides minimum-standard practices to help employees systematically manage health and safety on the job.*

The *Health and Safety Manual* incorporates rules related to changes in conditions, equipment, procedures and OSHA requirements. The information supports job-planning activities, appropriate work practices and training, which help reduce injuries.

Many of the health and safety procedures contained in the manual are based on past incidents that could have been prevented. A thorough understanding of the information and strict observance of proper practices and enforcement by managers and supervisors can prevent similar incidents in the future. Topics from the *Health and Safety Manual* can be used as best-practices or discussion points during weekly safety meetings.

Each employee is responsible for becoming familiar with *Health and Safety Manual* and abiding by the safe work procedures as they apply to their duties.

## ***Job Briefings***

*Job briefings are conducted to discuss potential hazards and mitigation methods. During briefings, employees can ask questions and provide suggestions to improve the safety and efficiency of a job. Supervisors also can ensure employees understand how to perform the work safely.*

The Occupational Safety and Health Administration mandates that a job briefing be conducted prior to the start of any job that is associated with electric power generation, transmission or distribution lines, or related equipment or facilities. Gas Distribution should follow the same guidelines as a best practice.

A job-briefing checklist should be completed before the start of a job. Employees who work alone should review the checklist to be sure they are prepared to perform the work. The length of a briefing should depend on the nature or complexity of the job. A brief safety discussion may be satisfactory for routine jobs. More intensive discussions are necessary when the work is complicated or particularly hazardous, or when the hazards are not apparent. Daily job briefings should be documented in writing. Topics applicable to the job should be covered during a briefing, but at the very least should include:

- The hazards associated with the job;
- Work procedures involved;
- Special precautions;
- Energy-source controls, including lock out/tag out and grounding; and
- Required personal protective equipment.

A job briefing on an energized substation must include:

- The hazards associated with the job;
- Work procedures involved;
- Special precautions;
- Energy-source controls, including lock out/tag out and grounding;
- Required personal protective equipment;
- The location of energized equipment in or adjacent to the work area; and
- Limits of any de-energized work area.

## ***Work Safety Audits***

*Inspections of work areas and audits of safety procedures are tools that can identify problems and hazards before they result in incidents or injuries. Audits also help evaluate the effectiveness of safety management and ensure regulatory compliance and a safe workplace. Employees in any position can conduct a basic safety audit at any time.*

To be effective, a work safety audit must be accurate, complete and contain enough information to serve as an inventory of a work unit's knowledge and habits. The audit also should be used as a control to ensure compliance with regulatory and company procedures. Monitoring work sites for proper procedures is mandatory because LG&E and KU are held accountable by the Kentucky Public Service Commission to follow its guidelines and those of National Electric Safety Codes.

Work safety audits must be performed routinely and randomly. Each local group can determine the number of audits to perform annually. An audit's quality depends on the observation and knowledge of the person conducting the audit. Line management should follow-up in the event an issue is discovered.

The audit should be discussed with the work unit's supervisor, who will share violations and poor work habits as well as praise and recognition for safe work behaviors. Minutes of the discussion and the names of attending employees must be recorded during the audit. The auditor should work with personnel until they understand the value and importance this initiative has on employees' safety performance. Honesty and consistency are essential factors in an audit.



## ***Safety Audit Components***

*These key components should be covered in a comprehensive safety audit.*

**Written Program Review.** The auditing person should conduct a comprehensive review of the area's written safety plan. This review should compare the company's safety requirements to local, state and federal regulations for hazard identification and control, and required employee training and record-keeping.

**Program Administration.** The auditor should review the implementation and management of specific program requirements, and ask these and similar questions to facilitate the process.

- Is someone assigned and trained to manage the program?
- Are specific duties and responsibilities assigned?
- Are sufficient assets provided?
- Is there an effective and ongoing employee training program?

**Record and Document Review.** The auditing person should review all records and documentation that are the only means by which the company can prove it is meeting regulatory requirements. Missing or incomplete documents or records indicate a plan is not working as designed. A record review includes examining the results, recommendations and corrective actions from the last audit.

**Equipment and Material.** The auditing person should inspect the condition and applicability of equipment for hazard control, and ask these questions.

- Is the equipment in safe condition?
- Is there adequate equipment to safely conduct tasks?
- Is personal protective equipment used and stored properly?
- Is equipment, such as exit lights, emergency lights, fire extinguishers, and material storage and handling equipment designed and staged to control hazards effectively?
- Are the employees operating the equipment properly trained and qualified?

**General Area Walk-Through.** A general walk-through of work areas can provide additional insight into safety effectiveness and can support the audit information. The auditing person should keep notes about unsafe conditions and acts observed during the walk-through.

**Corrective Actions.** The manager and supervisor should execute corrective actions. Priorities should be based on the hazard levels of the issues. All safety deficiencies found during audits and inspections should be corrected as soon as possible. Conditions that present a serious hazard must be corrected or controlled immediately. Documentation of corrections should be made on the audit or inspection sheet and assigned a completion and review date. Records of completed corrective actions should be reviewed through the normal management chain and be filed for use during the next audit.

### **Special-Emphasis Safety Audits**

Special-emphasis safety audits may be required as a result of reported near misses/close calls, safety concerns, injuries and other incidents. They also can be scheduled as regular audits. A special-emphasis safety audit team, coordinated by the director of Safety and Technical Training, should take a fact-finding approach to gather data. Persons who conduct the audit should be familiar with the company's safety plan and local, state and federal requirements. An audit should include four basic questions on which comments, recommendations and corrective actions should focus.

- Are all regulatory and industry best practice requirements covered?
- Are the requirements being met?
- Is there documented proof of compliance?
- Is employee training effective?

## ***Safety Concern Reporting***

Individual employees and safety committees should communicate and address concerns, hazards and recommendations that can affect workforce safety. A safety concern about any topic should be given to the supervisor and safety specialist. Issues may pertain to changes in procedures, enhancements or corrections to a safety plan; unsafe procedures or conditions; or any situation that an employee believes to conflict his or her interest, safety or well-being or that of co-workers.

### **Safety Hotline**

LG&E and KU employees and business partners can quickly report safety concerns, issues and suggestions via a Safety Hotline at 502-333-1754. Callers can leave an anonymous message or provide contact information for a follow-up. The hotline ensures an open line of communication about safety.

## ***Near-Miss/Close-Call Reporting***

*What is a near miss or close call? Either is an unsafe incident that has the potential to cause an injury or property damage. Reporting these incidents reduces injuries because the potential hazard or action can be corrected before it causes an incident.*

Near misses and close calls should be reported to a supervisor, safety specialist or safety committee member for investigation and correction. They may be submitted anonymously if the employee prefers. Corrective actions may include, but are not limited to, changes in procedures, physical repairs or alterations to equipment, and/or employee training. Near-miss/close-call reporting will not be used for disciplinary purposes. If the near miss/close call requires a change in safety or work procedures, the safety specialist is responsible for following up and implementing the changes.

Near-miss/close-call reporting provides benefits in addition to preventing injuries, such as:

- Enhancing awareness of safety in general;
- Communicating information in a timely manner;
- Involving employees in problem-solving and developing corrective measures;
- Including employees in the decision-making process; and
- Fostering employee participation in incident investigations.

## ***Motor Vehicle Safety***

*LG&E and KU employees drive more than 13 million miles annually and face many hazards, including rough terrain, poor road conditions, public vehicles and distractions. Safe-driving techniques and defensive-driving awareness help prevent incidents. Regular vehicle inspections protect employees, while they drive and address some of the more common incidents. They are:*

- Backing into objects;
- Being struck by a public vehicle;
- Hitting a public vehicle;
- Swiping a mirror; and
- Sliding on a slick road.

## **Mobile Phone Use by Commercial Drivers**

Federal Motor Carrier Safety Administration Rule 2126-AB29 is intended to improve highway safety by reducing distracted driving-related crashes, injuries and fatalities involving commercial motor vehicle drivers.

The rule limits the use of hand-held mobile phones by commercial drivers. Specifically, it prohibits a commercial driver from holding a mobile phone to conduct voice communication or dialing a mobile phone by pressing more than a single button, while operating his or her vehicle on the highway. This includes texting, which is already prohibited by prior regulations, state law and company policy. The use of two-way and citizens band radios are permitted.

Drivers are allowed to use hand-held mobile telephones to communicate with law enforcement officials or other emergency services. In addition, the new rule permits truck drivers to use hand-held mobile devices after they have moved their vehicles onto the roadside or off a highway or have stopped where the vehicle can safely remain stationary.

This rule is strictly enforced and employers are subject to civil penalties of up to \$11,000 per infraction for failing to ensure their employees comply. Employees can also receive personal fines up to \$2,750 per infraction. The rule calls for disqualification of interstate commercial drivers who are convicted of using handheld mobile telephones. It also includes inter- or intrastate drivers convicted of violating two or more serious state or local laws or ordinances that restrict the use of handheld mobile devices.

### **Acceptable Accessories**

The ability of LG&E and KU's commercial vehicle fleet to effectively communicate in an easy and timely manner is critical to safely and reliably provide gas and electric service. To facilitate such communication in accordance with the rule, the following devices are acceptable for use by LG&E and KU employees.

- Approved hands-free devices (Bluetooth or headsets) with voice activation;
- Hands-free visor-mounted speakers; and
- Quality interference-free earpieces.

## ***Off-The-Job Safety***

*Statistics show that off-the job injuries far out-number those at work. Off-the job injuries can seriously impact employees' personal and work lives. An off-the-job injury can result in lost-time, reduced productivity and teamwork, and financially impact the individual and the company.*

The National Safety Council estimates that several million people are injured in home accidents annually. One person in 60 is disabled, and about 100,000 of these injuries result in some permanent impairment leading to lost work time. Falls and burns by gas or electrical equipment top the list. In addition, personal vehicle accidents kill or injure thousands each year.

Off-the-job safety should be a mindset and an extension of LG&E and KU's safety culture. Consequently, off-the-job incidents can be prevented by employing safety behaviors, training and personal protective equipment used at work. Upon request, employees will be provided safety glasses, earplugs and work gloves for use at home.

Hazard mitigation, emergency actions, fire prevention, CPR, first aid and other safety-related topics can be used during off-the-job activities as well.

## ***Public Safety***

*Public safety, like employee and contractor safety, is an LG&E and KU business priority. Concern for customers and the public is our moral and legal responsibility as well as the right thing to do. The company ensures public safety through strict work practices and the support of educational, promotional and other outreach initiatives regarding natural gas and electricity. Safety messages reach many different audiences and age groups through various media and methods.*

## **Work Standards**

LG&E and KU employees are expected to adhere to strict safety procedures, while working at company facilities, on private property and in public areas. Proper work zone safety and protective equipment must be in place at all times when crews are working.

## **Communication and Educational Outreach**

LG&E and KU use many different types of media to inform and educate the public about gas and electric hazards and safety. Among these are advertising, social media, the company's web site, customer bill inserts and letters and public safety messages, including those about downed lines during storms. Throughout the service territory, LG&E and KU also sponsors gas and electric safety demonstrations and presentations, including those by the company's electric mascot Louie the Lightning Bug.

## **Local and State Emergency Agencies**

LG&E and KU employees in Safety and Technical Training and other areas conduct specialized training on natural gas and electric safety for firefighters, other emergency response personnel and safety professionals throughout the service territory. They also assist with continuing-education programs, which cover natural gas and electricity. In turn, LG&E and KU employees learn about the practices and needs of these groups during emergency situations. This enables crews to work more effectively with



emergency response personnel. Safety specialists also distribute awareness materials and conduct classes at schools, civic meetings and other public gatherings.

### **Public Safety Response Team**

The Public Safety Response Team responds to storm events, primarily downed wires, to protect the public from injury. The teams consist of employees and some business partners who perform this work in addition to their regular duties. Their roles include serving as wire-sitters (guarding downed wires) and dispatchers.

### **Emergency Response and Planning**

Maintaining and developing partnerships with county, state and federal emergency management agencies is an important aspect of public safety. Collaboration, communication and cooperation between the company and these agencies enable all parties to ensure the safety and well-being of the public during emergencies. LG&E and KU's involvement in activities, such as planning meetings, table-top exercises and presentations, enable the company to foster working relationships and promote safety as its priority.

### **Tracking**

All public safety initiatives should be reported to the Safety and Technical Training Department for reporting and documentation purposes. The information should include the:

- Goal of the initiative;
- Name of the targeted audience;
- Date of the initiative;
- Approximate number of persons reached;
- Names of company representatives presenting the program; and
- Measure of effectiveness (if any).

## *Closing Message*

*We all are very proud of the culture of safety excellence we have created at LG&E and KU. Here, employees and business partners work safely and productively because everyone has the freedom and authority to make critical safety decisions without reservation and with unconditional management support. Equally as important is that we also value and accept the responsibility for taking care of each other.*

Reaching this point has been a long and challenging journey because of our high-risk, multi-functional work environment. Over time, though, the relentless energy, determination and dedication to safety by both employees and business partners created this culture, our position as a safety leader and a legacy that we plan to sustain. To do so, we cannot rest on our laurels. We must continue to demonstrate positive safety behaviors, launch fresh ideas, uncover and share best practices and generate safety synergies among the workforce. We must deliberately and with purpose demonstrate and hold close to the characteristics that comprise our legacy, including our values, core elements and other elements that drive the culture. And we can never take for granted the strong cohesion of our workforce that propels LG&E and KU forward.

Pride and teamwork will continually rejuvenate our culture of safety excellence and our legacy with each new generation.

# **CONTRACTOR HEALTH & SAFETY PROGRAM**

**LG&E AND KU  
220 WEST MAIN ST.  
LOUISVILLE, KY 40202**

**Revision 1  
5/28/2021**

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## **I. PURPOSE**

As part of our continued commitment to deliver a world-class health and safety program, LG&E and KU (as defined in Section IV below) is dedicated to ensuring the same performance standards and expectations are made of Contractors (as defined in Section IV below) as we make of employees. This commitment has been shared by LG&E and KU with the regulatory agencies that govern our business.

## **II. SCOPE**

This Contractor Health and Safety Program ("Program") applies to Contractors performing construction, maintenance, engineering or similar services on LG&E and KU or customer property or in an LG&E and KU easement or right-of-way, which are typically provided under the following agreements: General Commercial Agreement (GCA); Master Contract for General Engineering Services; Engineering, Procurement and Construction (EPC) Agreement; Procurement and Construction (PC) Agreement, Abatement and Demolition (Ab/Demo) Agreement, or Equipment Purchase Agreement (EqPA). This program does not apply to Contractors performing only professional or administrative services such as accounting, medical, legal, clerical, and certain IT related services, which are typically provided under an Administrative Services Agreement (ASA).

As part of our commitment to improving Contractor health and safety performance, all LG&E and KU businesses operating within LG&E and KU's service territories have implemented a "Safety Passport Program" ("Passport") The basic elements of the program are a required awareness program and the attestation from each Prime Contractor that all workers have received appropriate skills and safety training.

This Program ensures that any worker performing work for a Contractor at an LG&E and KU site or customer's property has received Passport training and is fully aware of LG&E and KU's commitment to an uncompromised safe working environment. All workers are made aware they are required to stop any job for which they have not been trained or is a danger to a person(s), equipment, or the environment.

Contractor safety performance and Passport attestations are managed through a web-based database in Avetta. The Avetta system tracks the Contractor's overall safety performance, an individual's Passport training and also lagging indicators of performance in terms of OSHA recordable injuries, drug and alcohol testing, and hours worked.

## **III. LEGAL REQUIREMENTS**

This Program does not replace a Contractor's existing safety and health program(s), provided that their program(s) meets or exceeds the requirements of this Program and any additional site-specific minimum requirements. Employees of a Contractor not following this Program will be subject to removal from the job site. Refer to **Appendix E (Red List)**.

All Contractors are required to comply with all federal and state safety laws and all applicable provisions of the LG&E and KU Health & Safety Manual, which is incorporated in this Program by reference. Each Contractor is responsible for conducting its work and activities safely. LG&E and KU expects and requires that each Contractor continuously update employees with respect to safety issues relevant to the work and to take immediate corrective action when employees violate safety rules or procedures.

Each Prime Contractor is responsible for ensuring that any and all Sub-Contractors working under their purview are held to the same performance expectations, and therefore this Program, as the Prime Contractor itself.

#### IV. DEFINITIONS

**Competent Person** – An individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to workers, and who has authorization to take prompt corrective measures to eliminate them.

**Contractor** – Any Prime Contractor or Sub-Contractor (as such terms are defined below).

**Contractor's Representative** – A competent representative of a Contractor whom the Contractor designates to carry out Contractor's supervisory, statutory, and contractual obligations, and to represent the Contractor at the work site. The person designated by the Contractor to effectively manage health and safety issues that relate to the work site. This person may be referred to as the "Contract Supervisor" or other title.

**Hazard Analysis** – A comprehensive review of the tasks, hazards, and mitigation measures associated with a Contractor's planned work. Refer to **Appendix C (Hazard Analysis and Mitigation Form)**.

**LG&E and KU** – means (i) Louisville Gas and Electric Company, (ii) Kentucky Utilities Company, and (iii) LG&E and KU Services Company. As used in this Program, "LG&E and KU" refers to those three companies collectively, except in instances where this Program applies to work under a specific contract, in which case "LG&E and KU" refers only to those of such three companies as are party to that contract.

**Prime Contractor** – A person, whether an individual, company, partnership, corporation, or other entity, that has contracted directly with LG&E and KU to perform work.

**Proponent** – A competent LG&E and KU manager's representative designated to carry out LG&E and KU's supervisory, statutory, and contractual obligations, and to

represent LG&E and KU related to a Contractor.

**Qualified Person** – An individual who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated their ability to solve or resolve problems relating to subject matter, the work, or the project.

**Red List** – The revoking of a Passport certification and access to LG&E and KU property. Refer to **Appendix E (Red List)**.

**Site** – The place at which the work is to be carried out.

**Safety Specialist** – An employee of the LG&E and KU Safety & Technical Training department, Power Generation Safety Specialist, or Project Engineering Safety Specialist.

**Sub-Contractor** – Any person, whether an individual, company, partnership, corporation, or other entity, that has contracted directly or indirectly with a Prime Contractor to perform work that such Prime Contractor has agreed to provide to LG&E and KU under a contract.

## **V. RESPONSIBILITIES**

### **Contractor**

- Prepare Hazard Analysis based on tasks to be performed and maintain copy for 12 months
- Review Hazard Analysis with their employees
- Update Hazard Analysis as conditions change
- Make Hazard Analysis readily accessible to their employees and LG&E and KU
- Ensure all employees of the Prime Contractor and its Sub-Contractors receive appropriate Passport training(s) prior to coming on LG&E KU property
- Maintain employee training and access records as appropriate
- Submit monthly work hours, drug and alcohol testing, and any incidents by the **fifth working day of the following month** for any month that work was performed for LG&E and KU by the Prime Contractor and/or its Sub-Contractors.

### **Proponents**

- Facilitate the Contractor's safe execution of work. This may include:
  - Job Set-Up and Preparation Duties:
    - Provide relevant job and safety information to Contractor
    - Review, revise and accept Hazard Analysis
    - Ensure Contractor is green (fully compliant) or yellow-flagged (compliant with conditions) in the Avetta database prior to starting work
    - Ensure yellow-flagged Contractor works within any conditions set for them
    - Confirm all Contractor employees have received appropriate Passport training(s) prior to coming on LG&E and KU work sites
    - Coordinate safety kickoff meeting, as applicable.
  - Job Initiation:
    - Confirm daily job briefings are performed.
    - Confirm tasks performed in accordance with accepted Hazard Analysis

- Confirm hours and D&A information gets entered.
- Manage Contractor employee physical access

### **Safety Specialist**

- Assists Proponent with facilitating and monitoring the Contractor's safe execution of work. This may include reviewing hazard analysis and providing comments to the Proponent.
- Utilize the Red Flag Review process when a Contractor's safety performance does not meet LG&E and KU's approved performance standards within Avetta.
- Provide oversight for the Contractor safety approval process
- Conduct manual safety reviews in circumstances not captured by the Avetta database, such as warranty or emergency work.

## **VI. CONTRACTOR SAFETY APPROVAL**

Prime Contractors are required to be onboarded as part of the LG&E and KU procurement process, which will include additional requirements prior to any work beginning. During the onboarding process, Contractors shall complete **Appendix A (Contractor Health and Safety Attestation)** and submit to LG&E and KU sourcing professional. Prime Contractor safety approval is a critical component of onboarding which involves a review of Prime Contractor safety performance and programs. Prime Contractor safety performance metrics and programs will be submitted to Avetta, which is a web-based application developed to assist in tracking Prime Contractor safety performance and administration of the Passport program. Examples of collected data include hours worked, drug and alcohol testing, and injuries sustained while working on LG&E and KU work sites. In the event a Prime Contractor uses Sub-Contractors, the Prime Contractor for the job is required to enter all hours worked, including Sub-Contractor(s) hours, into the Avetta Database. Sub-Contractors are responsible for reporting hours worked to the Prime Contractor, who has the direct business relationship with LG&E and KU for the job, and the Prime Contractor is responsible for ensuring each Sub-Contractor completes such reporting. The Prime Contractor is responsible for completing the data entry. If data entry is not completed, LG&E and KU representatives will communicate with the Prime Contractor involved.

### **Contractor Safety Approval Outside of Avetta**

A Contractor exception process can be utilized in lieu of Avetta in the event of warranty work or response to emergencies and significant outage events on the Louisville Gas and Electric Company (LG&E) and Kentucky Utilities Company (KU) systems. Under critical circumstances, it is paramount to bring in off system resources to assist with restoration efforts.

Significant outages caused by, but not limited to, severe weather, flooding, civil disturbances, cyber, fire or explosion or other major disruption to LG&E and KU for which management personnel determines the need to deviate from the normal safety approval and Passport process for restoration of service.



**NOTE: This exception does not supersede any process currently in place by business units as defined in their Emergency Response and Preparedness Plans.**

Proponent must provide the Contractor with a copy of this LG&E and KU Contractor Health & Safety Program. The Contractor must complete and submit to the Proponent the following documents from the Program.

- LG&E and KU Contractor / Sub-Contractor Health and Safety Questionnaire (Refer to **Appendix B (Contractor Health and Safety Questionnaire)** for additional information)
- Job Hazard Analysis & Hazard Mitigation Plan (Refer to **Appendix C (Hazard Analysis and Mitigation Form)** for a sample)

The above documents will be reviewed by the Safety Specialist. After approval, the Proponent shall coordinate with Safety Specialist to ensure the appropriate Passport training is provided to any Contractor employees before starting work.

The Prime Contractor is responsible for attesting that any employee, including employees of Sub-Contractors if applicable, completes Passport training prior to working on any LG&E and KU work site.

## **VII. CONTRACTOR HEALTH AND SAFETY PASSPORT PROGRAM**

The Passport program is designed to reinforce LG&E and KU's commitment to effective health and safety management, raise awareness of commonly encountered hazards and reinforce the behavior expected of Contractor employees at the worksite. The Passport program is intended to support existing programs, compliance training and complement local orientation training sessions. Refer to **Appendix D (Contractor Safety Passport Overview)** for the specific requirements of the Passport program.

## **VIII. DRUG AND ALCOHOL PROGRAM**

Contractors shall not allow any employee to perform services for or on behalf of LG&E and KU while under the influence of drugs or alcohol. Contractors shall maintain a drug and alcohol (D&A) testing program meeting all applicable federal, state and local laws, regulations, and ordinances and meeting or exceeding the standards stated in the attached **Appendix F (Drug and Alcohol Requirements)**, which is incorporated by reference, and any and all standards stated in any contract with LG&E and KU. Contractors shall enter D&A testing information monthly into the Avetta system.

## **IX. HAZARD ANALYSIS**

Prime Contractor shall complete and submit, or require its Sub-Contractors to complete

and submit, a Hazard Analysis to the Proponent prior to the initiation of any work. A sample form is available at **Appendix C (Hazard Analysis and Mitigation Form)**. The Hazard Analysis shall be reviewed by all Contractor personnel scheduled to work in the activities identified prior to working on them. The Prime Contractor shall maintain proof that all personnel have reviewed the Hazard Analysis and shall make available such proof upon request. Note: This by no means shall replace their regulatory compliance training.

Refer to **Appendix G (Hazardous Chemical Communication)** for a list of hazardous chemicals that may be present on LG&E and KU work sites, which shall be addressed in the Hazard Analysis, as appropriate. This list should in no way be deemed as the only hazards that could be encountered at LG&E and KU.

#### **Job Briefings**

Prime Contractor shall ensure that its employees and any Sub-Contractor employees under its control on the job site perform a job briefing. The job briefing shall be performed prior to the start of each job. Refer to **Appendix H (Job Briefing Guidance)** for additional information.

#### **Stop Work Authority**

All employees of any Contractor and all employees of LG&E and KU have the authority and responsibility to stop work for any condition or behavioral action that poses a danger to a person(s), equipment, or the environment without fear of repercussion. The work shall be immediately stopped, and the incident shall be reported to supervision.

Immediately after notifying supervisor, the individual, or their supervisor, must report the incident to the LG&E and KU Proponent and Safety Specialist. Work shall not resume until the LG&E and KU Proponent and Safety Specialist have agreed that the hazard has been eliminated and the area is safe.

### **X. INCIDENT MANAGEMENT**

An emergency is any situation that poses an immediate threat to life or property. Refer to the site orientation, or the LG&E and KU Proponent for specific information for handling of a life threatening or other serious injury, fire, etc. Following the occurrence of an emergency, the Prime Contractor shall ensure that all proper incident reports are completed and distributed, and that the LG&E and KU Proponent and Safety Specialist are notified immediately.

#### **Incident Reporting**

In the event a job site incident occurs, the Prime Contractor shall immediately implement controls and restrictions on the incident site to ensure the site remains undisturbed until released by the LG&E and KU Proponent and Safety Specialist. All incidents and injuries shall

be reported to the LG&E and KU Proponent and Safety Specialist immediately after the site is secured. A written incident report shall be furnished by the end of the same work shift during which the incident occurred. A job site incident would include, but not be limited to a fire, explosion, equipment failure, release or exposure to toxic liquids, fumes or vapors, employee injury, vehicle incident, etc.

#### **Near Miss/Injury-free Event**

It is the responsibility of the Prime Contractor, to complete all near miss investigations, and to report these occurrences with recommendations/implementation of corrective actions. The report is to be submitted to the LG&E and KU Proponent and Safety Specialist within 24 hours or a mutually agreed upon time by the Prime Contractor and Proponent.

#### **Fatality**

It is the responsibility of the Prime Contractor to immediately notify LG&E and KU should a fatality occur. It is the responsibility of the Prime Contractor to notify, or to ensure its Sub-Contractor notifies, the Federal and/or State Occupational Safety & Health, Division of Compliance within the appropriate notification periods.

### **XI. ENFORCEMENT**

The Prime Contractor is responsible for the health and safety of its employees and any Sub-Contractor employees under its control. Enforcement of this Program, as well as other recognized safety requirements, is the responsibility of the Prime Contractor. The evaluation does not constitute acceptance of the Contractor's safety programs or work practices nor, in any way relieve a Contractor of full responsibility for meeting all appropriate OSHA regulations to ensure the safety of its employees.

Whenever there is a jurisdictional question of which standard will apply, the most stringent safety practice will take precedence. Contractors and their employees who do not follow this Program are subject to removal from the worksite as well as being banned from future LG&E and KU projects/contracts.

LG&E and KU reserve the right to evaluate the safety of Contractor's work practices to determine if they meet LG&E and KU standards and state/federal regulations. In addition to the audit rights under the applicable contract, LG&E and KU reserve the right to audit any and all documents (e.g. job briefings, audits, etc.) at any time during the course of the work.

**APPENDIX A**

# **LG&E and KU Services Company Contractor Health & Safety Attestation**

*As an authorized representative for the company named below, I affirm that same company has been provided copies of both the LG&E and KU Health & Safety Manual (dated April 2017) and Contractor Health & Safety Program (dated May 28, 2021) and I understand and agree that same company will abide by the requirements set forth therein and ensure its Sub-Contractors will also abide by the applicable requirements set forth therein; and confirm this by signing below.*

Contractor Company Name: \_\_\_\_\_  
Contractor Representative (sign): \_\_\_\_\_  
Contractor Representative (print): \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

*Complete and submit this form to your LG&E and KU sourcing professional.*

## **APPENDIX B**

### **CONTRACTOR HEALTH AND SAFETY QUESTIONNAIRE**

**This questionnaire should only be completed upon request of LG&E and KU to conduct manual safety reviews outside of the Avetta database in circumstances such as warranty or emergency work or other circumstances as identified by LG&E and KU.**

The Company is committed to providing a safe and healthy workplace for employees and Prime Contractors/Sub-Contractors. To qualify to perform work, the Prime Contractor /Sub-Contractor shall provide the following information and agree to obtain the following information from all Sub-Contractors utilized.

Prime Contractor /Sub-Contractor Name: \_\_\_\_\_ Date: \_\_\_\_\_

Contracted Activity (please describe): \_\_\_\_\_

Prime Contractor /Sub-Contractor Representative: \_\_\_\_\_  
Phone: \_\_\_\_\_

Please provide a brief description of the work activities and location(s) undertaken by your company:

**The following information must be from the facilities providing labor. We are not interested in overall statistics at a national or international level.** Describe the area to which this questionnaire applies \_\_\_\_\_

In the table below, provide the three most recent full years of history for the area or region this questionnaire applies. **In addition, attach copies of applicable OSHA 300 Logs (showing the actual injuries, etc. – not the summaries) and verification of your EMR/discount rate information.**

ITEM	DESCRIPTION	20____	20____	20____
A	Interstate Experience Modification Rate (EMR)			
	Using the OSHA 300 Logs from the facilities providing labor, please document the following:			
B	Recordable Incident Rate (RIR)	_____	_____	_____
C	Lost Time Incident Case Rate (LTICR)(only incidents that resulted in days away from work)	_____	_____	_____
D	Days Away, Restricted or Transferred (DART)(includes days away from work, job transfers and job restrictions)	_____	_____	_____
E	Number of Injuries and Illnesses (Total Line Entries of 300 Log)	_____	_____	_____
F	Number of Lost Work Day Cases (Column H of 300 Log)	_____	_____	_____
G	Number of Job Transfer or Restriction Cases (Column I of 300 Log)	_____	_____	_____
H	Number of Injury Related Fatalities (Column G of 300 Log)	_____	_____	_____
I	Employee Hours Worked/Year (If unknown use # of employees x 2080)			
J	Total Number of Employees			
K	NAISC Code			

	Question	Y / N	Comments
1.	Does your company have a written safety and health program? Please attach a copy with this submission.		
2.	Does your company have a written Hazard Communication Program?		
3.	Does your company have a written environmental compliance assurance program? Does your company have a written DOT Operator Qualification Plan? Please attach a copy with this submission for review.  Note: Plan must meet or exceed LG&E and KU Services Company Gas Distribution Operator Qualification Plan.		
4.	Does your company use Sub-Contractors? (This Questionnaire is required for all Sub-Contractors)  If you do use sub-Contractor s, do you qualify Sub-Contractors based on their ability to address safety, health, and environmental requirements?  Do you verify that Sub-Contractors meet regulatory requirements?  Does your Sub-Contractor have a DOT Operator Qualification Plan or are they qualified under your plan. If they have their own plan then please submit a copy for review		
5.	Are all documents, pertaining to this questionnaire, available for auditing? If no, please explain		
6.	Who in your company is responsible for coordinating your safety and health program?  Name/Job Title: _____  Phone # (     ) _____  Is safety and health a full time responsibility for this position?		
7.	Has your company received any citations from a regulatory agency during the last three years?  If yes, describe citation(s)		
8.	Does your company perform safety audits/review?  If yes, are safety audits documented?		
9.	Who reviews the safety audit/review and how often?  Job Title: _____		

10.	<p>Does your company provide/require the following?</p> <p>Eye Protection (ANSI-Z41.1)(29 CFR 1910.133)</p> <p>Fall Protection (ANSI-Z41.1)(29 CFR 1926.501 or 1910.66)</p> <p>Foot Protection (ANSI-Z41.1)(29 CFR 1910.136)</p> <p>Hand Protection (ANSI-Z41.1)(29 CFR 1910.138)</p> <p>Hard Hats (ANSI-Z89.1)(29 CFR 1910.135)</p> <p>Hearing Protection (ANSI-Z41.1)(29 CFR 1910.95)</p> <p>Respiratory Protection (ANSI-Z41.1)(29 CFR 1910.134)</p>		
11.	<p>In addition to regulatory required Personal Protective Equipment, what other PPE is required or supplied?</p> <p>If any, please describe or list: _____</p>		
12.	<p>Describe how you will meet the requirements for first aid and medical provision under this contract.</p>		
13.	<p>Does your company have scheduled, documented employee safety meetings?</p> <p>If yes, how often? _____</p>		
14.	<p>Who conducts the safety meetings?</p> <p>Job Titles: _____</p>		
15.	<p>What managers/supervisors participate in the safety meetings?</p> <p>Job Titles: _____</p>		
16.	<p>Are meetings reviewed and critiqued by managers/supervisors?</p>		
17.	<p>Does your company hold on-site (tailgate/toolbox) safety meetings?</p> <p>If yes, how often? _____</p> <p>Who conducts these safety meetings?</p> <p>Job Titles: _____</p> <p>Is documentation available?</p>		
18.	<p>Does your company have a written policy regarding drug screening or testing of your employees?</p> <p>If Yes, please provide a copy of your plan to The Company representative.</p>		

19.	<p>Does your drug-testing program conform to DOT requirements?</p> <p>Comments:_____</p> <p>If yes, which set of DOT regulations does your drug-testing program designed to satisfy?</p> <p>Pipeline and Hazardous Material Safety Administration PHMSA</p> <p>Federal Motor Carrier Safety Administration FMCSA</p>		
20.	<p>Does your company have policy requiring written accident/incident reports (spills, injuries, property damage, etc.)?</p>		
21.	<p>Does your company conduct accident/incident investigating?</p> <p>If yes, please attach a brief outline of procedures</p>		
22.	<p>Does your company document, investigate and discuss near miss accidents?</p> <p>If yes, is documentation available?</p>		
23.	<p>Are accident/incident reports reviewed by managers/supervisors?</p>		
24.	<p>Indicate the circumstances in which your company's employees may be subject to drug screening.</p> <p>Employment</p> <p>Random</p> <p>Probable Cause</p> <p>Post Accident</p> <p>Periodic</p> <p>Other</p>		



**PLEASE RESPOND TO ALL ITEMS WITH “YES, NO, OR NA.” (ESTIMATED PERCENTAGE OF EMPLOYEES SHOULD REFLECT THE PERCENTAGE OF EMPLOYEES PROVIDING LABOR WHO HAVE RECEIVED TRAINING).**

PROGRAMS/TRAINING	REFERENCE SOURCE	PROGRAM DOCUMENTED AND WRITTEN Y/ N/ NA	EST. %	FREQUENCY OF TRAINING FOR INDIVIDUAL EMPLOYEES
Asbestos Class IV (Awareness)	OSHA 29 CFR 1926.1101			
Asbestos Class III	OSHA 29 CFR 1926.1101			
Asbestos Class I and II	OSHA 29 CFR 1926.1101			
Confined Space Entry	OSHA 29 CFR 1910.146(g)			
Cranes	OSHA 29 CFR 1926 Subpart CC			
Natural Gas Operations	DOT 49 CFR 192, Subpart N			
DOT HM-126\ f Hazmat Employee	DOT 49 CFR 172.704			
Generation, Transmission, and Distribution Standard	OSHA 29 CFR 1910.269			
Electrical Safety	OSHA 29 CFR 1910.332			
Emergency Evacuation	OSHA 29 CFR 1910.38(a)			
Excavations	OSHA 29 CFR 1926.651			
Fall Protection	OSHA 29 CFR 1926.500			
First Aid/CPR	OSHA 29 CFR 1910.151(b)			
Forklifts	OSHA 29 CFR 1910.178(l)			
Hazard Communications	OSHA 29 CFR 1910.1200(h)			
Hazwoper - Awareness Level	OSHA 29 CFR 1910.120			
Hazwoper 8 Hour	OSHA 29 CFR 1910.120			
Hazwoper 24 Hour	OSHA 29 CFR 1910.120			
Hazwoper 40 Hour	OSHA 29 CFR 1910.120			
Hazwoper Supervisor 8 Hour	OSHA 29 CFR 1910.120			
Hearing Conservation	OSHA 29 CFR 1910.95			
Incipient Fire Fighting	OSHA 29 CFR 1910.157(g)			
Lead Worker	OSHA 29 CFR 1926.62(l)			
Lead Supervisor	See Above			
Lockout/Tag out Authorized Person	OSHA 29 CFR 1910.147(c)(7)			
Lockout/Tag out Affected Person	See Above			
New Employee Orientation	OSHA 29 CFR 1910.119(g)			
Personal Protective Equipment	OSHA 29 CFR 1910.132(f)			
Process Safety Management	OSHA 29 CFR 1910.119			
Respiratory Protection	OSHA 29 CFR 1910.134			
Scaffolding	OSHA 29 CFR 1926.454			
Substance Abuse	DOT 46 CFR 16.401 & 391.119			

## APPENDIX C

### HAZARD ANALYSIS AND MITIGATION FORM

This sample Hazard Analysis and the required subsequent Hazard Mitigation Plan, or an accepted alternate form, shall be completed by the Contractor's Representative once work has been awarded. It shall be submitted to the LG&E and KU Proponent and reviewed with their safety specialist/consultant prior to the initiation of any work. It is an expectation that the Contractor will identify specific hazards related to the scope of work.

Work description and location:

LG&E and KU Services Company Proponent:

Estimated Total Work Days:

Estimated Work Force #:

#### **Equipment Related Compliance and Safety**

Will the Contractor use any of the following or be exposed to its use?

**Will use it or be  
exposed to its use?**

Abrasive Wheel Machinery	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Aerial Work Platform Operation	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Barricades	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Excavation Equipment	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Cranes: Overhead <input type="checkbox"/> Mobile <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Overhead Power Lines?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If yes specify voltage:		
Forklift Operation	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Ground Fault Protection (GFI's/GFCI's)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Grounding devices and processes (static)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Hand Tools / Power Tools	Yes <input type="checkbox"/>	No <input type="checkbox"/>

#### **Specific Hazardous Substances Compliance and Safety**

Anhydrous Ammonia	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Arsenic	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Asbestos	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Bloodborne Pathogens (Applies to all)	Yes <input type="checkbox"/>		
DOT Hazardous Materials	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
EPA Hazardous Waste	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Explosive Gasses, Vapors, or dusts	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Hazard Communication (Applies to all)	Yes <input type="checkbox"/>		
Hexavalent Chromium (Hot Work)	Yes <input type="checkbox"/>	No <input type="checkbox"/>	(Mandatory contact with H&S Rep.)
MSDS's supplied on all materials	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Radiation	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Lead or other toxic metal concerns	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Natural Gas	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Hydrogen Sulfide	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Other / Specify	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

## Personal Protective Hazard

Which of the following PPE will be required?

Electrical protective equipment	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Low voltage gloves (Class 0, 50-600 volts)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Boundary Distances Established and Enforced	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Arc Flash PPE	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Class 2 600 -15kv gloves/sleeves	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Rubber insulated blankets/hoses	Yes <input type="checkbox"/>	No <input type="checkbox"/>
What will the exposed voltage level be?		
Eye Protection with side shields (at all times)	Yes <input type="checkbox"/>	
Goggles: directly vented <input type="checkbox"/> indirectly vented <input type="checkbox"/> Cutting <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Welding Hood	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Face Shield	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Fall Protection or Prevention	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Gloves (Appropriate to the specific task)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Life lines (horizontal or vertical)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Foot Wear: steel toes <input type="checkbox"/> electrical hazard rated <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Hard Hats (Applies to all)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Hearing Protection (Reduction to <85db. required)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Natural Gas Exposure PPE		
Fire Suit	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Positive Pressure Respirator	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Hood	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Harness	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Life Line	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Gloves	Yes <input type="checkbox"/>	No <input type="checkbox"/>
PFD (personal flotation device)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Traffic Vest	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Respiratory Protection	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Portable ventilation equipment	Yes <input type="checkbox"/>	No <input type="checkbox"/>

## Identify the respiratory hazard

Will the Contractor have exposure to:

Total dust	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Has air monitoring been arranged?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Silica	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Flyash	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Has air monitoring been discussed with the		
Asbestos	Yes <input type="checkbox"/>	No <input type="checkbox"/>	H & S Specialist/Consultant?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Cr(VI)	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Flamm Atm	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Lead	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
O <sub>2</sub> deficient	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
SO <sub>2</sub>	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
Others?	Yes <input type="checkbox"/>	No <input type="checkbox"/>			

**Work/Safety Procedural Requirements**      **Will use it or be exposed to its use?**

Bulk Chemical Unloading	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Compressed Gas Cylinders	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Confined Space Entry	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Specify:		
CPR & First Aid (per 1910.269)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
CPR & First Aid qualified person on site	Yes <input type="checkbox"/>	
Mobile Crane Operator Physicals (3 yr req)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
DOT Commercial Driver's License	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Excavation / Trenching and Shoring	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Explosion Hazard (Deslagging / Blasting)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Fire Protection (Hot work, welding & alike)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Gas Repair Procedures	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Lifting and Rigging	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Lockout/Tagout	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Grounding Procedures	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Equipment required to be isolated (list):		
Marine Standard	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Scaffold Competent Builder	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Scaffold Competent User	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Suspended Scaffolding	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Work Zone Traffic Safety	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Others / specify	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**Permits**

Are there any permits indicated with outside agencies?      Yes ☐      No ☐  
 Asbestos removal, building permits, work zones, RR crossing, environmental impact, etc.)  
 Detail:

Are there any OSHA related permits?      Yes ☐      No ☐  
 (Permit Required Confined Space Entry, Dig permits and alike)  
 Detail:

**Work Area Lighting**

Additional lighting devices will be needed      Yes ☐      No ☐  
 Type of lighting:

**Specify Additional Hazards:**

**Further instructions:**

For each Yes box checked or additional hazards identified, a Hazard Mitigation Plan must be submitted along with this Hazard Analysis prior to the initiation of any work.

Name of the contracted firm:

Name of the Contractor 's Health & Safety designee completing this Hazard Analysis:

Date:

Phone number:

The Hazard Mitigation Plan shall be completed by the Contractor 's designee and submitted to LG&E and KU's authorized representative or their designee and forwarded to the Safety Specialist/Consultant prior to the initiation of any work. Note: All items identified on the Hazard Analysis (checked "Yes") must be listed with the appropriate mitigation steps on the Hazard Mitigation Plan. In addition, other hazards related to the work that are not listed on the Hazard Analysis must also be identified and mitigated on the Hazard Mitigation Plan.

Description of the general job activity:

Contractor 's site supervisor:

Contractor 's site Health and Safety:

Date:

**Contractor 's Hazard Mitigation Plan**

<b>List all "Yes" Identified Items</b>	<b>Identify and Analyze the Hazards</b>	<b>Hazard Controls</b> Develop specific controls for each hazard identified.

## **APPENDIX D**

### **CONTRACTOR SAFETY PASSPORT OVERVIEW**

#### **Purpose**

Safety is a core value at LG&E and KU. As part of our commitment to improving Contractor health and safety performance, LG&E and KU businesses operating within our service territories have implemented a "Safety Passport Program." The basic elements of the program are a required awareness program and the attestation from the Contractor that all workers have received appropriate skills and safety training.

This program ensures that any contract worker performing work at an LG&E and KU facility or customer property and covered by LG&E and KU's Contractor Health and Safety Program has received Passport training and is fully aware of LG&E and KU's commitment to an uncompromised safe working environment. The key components of the program are outlined below.

#### **Administration**

- All personnel working for Prime Contractors and Sub-Contractors on LG&E and KU property or job sites must have a Passport.
- The Passport is valid for 12 months or until revoked by LG&E and KU, whichever is earlier. Refresher training options will be developed and provided annually
- The expenses of training will be the responsibility of the Contractor.
- The Contractor is responsible for ensuring that all the above requirements are met for every individual worker utilized in work on LG&E and KU property or job sites. This includes all Sub-Contractors utilized directly or indirectly by a prime Contractor.
- The Prime Contractor will be responsible for ensuring that each Sub-Contractor has met all of the requirements regarding issuance of a Passport and for ensuring that all reporting requirements outlined in Step 5, below, are fulfilled.
- LG&E and KU reserves the right to revoke any individual's Passport. Refer to **Appendix E (Red List)**.
- LG&E and KU may monitor, audit, and request records or training and certifications required by regulations or company policy at any time.

#### **Process Steps**

##### ***STEP 1 – COMMERCIAL ONBOARDING***

All Contractors working for LG&E and KU on LG&E and KU work sites must be commercially onboarded prior to entering such work sites. This process is administered by the Supply Chain and Commercial Operations groups or as part of the specific project competitive bid process.

As part of the certification process, Prime Contractors (Contractors entering into contracts directly with the LG&E and KU) must identify any and all Sub-Contractors they plan on utilizing in work for LG&E and KU. Each Prime Contractor is responsible for ensuring that those identified sub-Contractors complete the same information and meet the same performance criteria as the Prime Contractor is expected to meet. In the event not all Sub-Contractors have been identified prior to certification, the Prime Contractor shall notify LG&E and KU before engaging any Sub-Contractor.

### ***STEP 2 – PASSPORT TRAINING***

Employees of Contractors must complete Passport training prior to performing work for LG&E and KU. The Passport training program is designed to inform them of the importance of safety and the hazards associated with working in an industrial environment. This training will also identify additional OSHA, EPA and DOT compliance training that may be needed in certain situations.

Passport training, however, does not take the place of any of the compliance training required by the above listed agencies. It is the responsibility of the Contractor to provide any compliance training required for their employees.

There are two options available to Contractors for Passport Training:

- **Option 1 - Computer-Based Training**
  - Contractor employees should complete Passport training requirements through Avetta's Worker Management web-based platform. These training modules include both General Passport and site-specific training.
- **Option 2 – In-Person Training**
  - Any deviation from the Avetta computer-based training must be approved by Safety.

### ***STEP 3 – PASSPORT ATTESTATION FORM***

Contractors will be required to attest to the fact that each employee, including Sub-Contractors working on any LG&E and KU job site or performing any work on LG&E and KU project, has received the required Passport training prior to starting work. The Contractor will also attest that all employees are current on all required compliance training for the work that employee will be performing. LG&E and KU may monitor, audit, and request records or training and certifications required by regulations or company policy at any time.

Upon successful completion of the required Passport safety training by a Contractor's employee, the Contractor will ensure the employee's training information is visible within the Avetta Worker Management database.

The Passport does not serve as security clearance for an employee. The Passport merely attests to the fact that the Contractor employee has completed all required training. Site access will be handled in accordance with local site access procedures. For long-term Contractor s, a photo ID with a magnetic strip may also be issued to a Contractor's employee for security purposes. For all other employees of Contractor s, a sign-in sheet may be utilized to track individuals on site.

### ***STEP 4 – SITE SPECIFIC ORIENTATION***

Employees of a Contractor working on certain LG&E and KU property or job sites must complete a site-specific orientation training identifying conditions such as parking directions, security procedures, site map, emergency evacuation procedures, emergency contact names, medical facility locations, specific alarms, and site-specific hazardous materials.

## **STEP 5 - HIRING SUB-CONTRACTORS**

Prime Contractor s are responsible for ensuring that any Sub-Contractors working for them in any capacity directly or indirectly are held to the same safety performance expectations as the Prime Contractor itself. The Prime Contractor shall request and review safety data prior to hiring any Sub-Contractors to assure they meet the standards for favorable under the following safety criteria (LG&E and KU emphasizes that these criteria are minimum standards):

- **Safety Criteria – INCIDENT RATES**

Favorable: The three most recent years recordable Incident Rates will be compared to the related industry average in such years for the Sub-Contractors' NAISC (or SIC) classification (as published by the Bureau of Labor Statistics). Sub-Contractors' Incident Rate shall not exceed the industry average in any related year.

Unfavorable: A single fatality identified within any of the three most recent year's statistics.

- **Safety Criteria – EMR**

Favorable: Workers Compensation Insurance Experience Modification Rate less than or equal to one (1.0).

Unfavorable: EMR greater than one (1.0)

Note: Contact LG&E and KU Safety for direction in situations where a particular Sub-Contractor does not meet the criteria due to extremely unique circumstances.



## **APPENDIX E**

### **RED LIST**

#### **Passport Process Contractor Red Listing Guidelines**

LG&E and KU reserves the right to revoke an individual's Passport or discontinue doing business with a company as a result of the failure to comply with company health and safety rules and regulations or the existence of unresolved serious health and safety issues. Within the Passport process, the revoking of a Passport and the Passport privilege is called "Red Listing".

#### **A. Reasons for Red Listing Contract Individuals**

Individuals may be Red Listed for any of the following reasons:

1. Failure to comply with company rules, procedures or programs, including safety.
2. Failure to comply with either LG&E and KU's or the Contractor employer's drug and alcohol rules or testing requirements.
3. Creation of an unsafe condition that has the potential to result in serious injury, death or equipment damage. Including but not limited to: LOTO violation, failure to properly use fall protection or failure of competent person duties.
4. Failure to cooperate with LG&E and KU personnel in the course of an investigation resulting in serious injury, death or equipment damage.
5. Defacing company property.
6. Theft of company property.
7. Fighting or other acts of aggression.
8. Any action or behavior which displays a disregard for personal safety or the safety of others as determined by LG&E and KU.

#### **B. Reasons for Red Listing Contract Company**

A contract company "Contractor" may be Red Listed for any of the above reasons plus:

1. Failure of a Contractor to establish and maintain a safety culture that will enable their employees to follow LG&E and KU's safety rules, policies and procedures and regulatory standards as required by contract.
2. Failure of the Contractor to cooperate with LG&E and KU personnel to ensure the health and safety of their employees, LG&E and KU employees or others.
3. Failure of the Contractor to cooperate with LG&E and KU personnel in the course of an investigation.
4. Failure of the Contractor to satisfactorily meet all post incident health and safety corrective requirements as determined by the investigation.
5. Withholding of pertinent information related to an incident investigation from LG&E and KU representatives.

**C. Procedure for Red Listing an Individual**

1. Upon red listing, the individual will be notified of the infraction and LG&E and KU's intent to revoke Passport card by their employer.
2. Absent an emergency, the individual will be removed from premises or job site by their employer. LG&E and KU will notify appropriate personnel to prohibit the individual from reentering the premises.
3. Safety will immediately change the individual's status to "Red List" and place appropriate comment information in the Avetta Database.

**D. Procedure for Red Listing a Contract Company**

1. A contract company may be Red Listed for any of the reasons listed in Sections A or B of these Guidelines.
2. A Line-of-Business Director shall lead a review the Red Listing event(s) and determine the appropriate course of action up to and including red listing of the contract company. If Red Listing of the company is decided:
  - a. The Line-of-Business Director will initiate a letter to the contract company of LG&E and KU's decision that the contract company will not be used for future work.
  - b. Once the letter has been issued and receipt verified, Safety will follow up with Supply Chain to ensure that the contract company's certification is removed in system and appropriate documentation is made in the Avetta Database.

LG&E and KU Safety may be contacted for additional Red Listing guidance on a case-by-case basis.

LG&E and KU reserves the right to revoke any individual's Passport for any reason that does not violate applicable Federal, state or local law.

If a Contractor wishes to request that LG&E and KU reconsider a revocation decision, the request may be submitted in writing to the Contractor Proponent or Safety. LG&E and KU is not obligated to consider such requests.

A Passport may be reinstated at the discretion of LG&E and KU if the Contractor has satisfied the Proponent and Safety the reason for revocation has been corrected.

If an individual's Passport is revoked for a second time, the individual will not be allowed to reapply for an LG&E and KU Passport.

## **APPENDIX F**

### **DRUG AND ALCOHOL REQUIREMENTS**

#### **LG&E and KU Contractor Drug and Alcohol Testing Requirements**

**Drug and Alcohol Testing of all Contractor Employees are required as follows:**

1. For all contracts awarded before October 1, 2017, all required Drug and Alcohol Testing must at a minimum be 5-panel tests.

For all contracts awarded on or after October 1, 2017, all required Drug and Alcohol Testing must at a minimum be 9-panel tests.

2. Supplemental Work is work provided by a Contractor through its employees<sup>1</sup> (Supplemental Work Employees) to perform maintenance or operations tasks on one or more LG&E and KU<sup>2</sup> sites<sup>3</sup>, necessary to support day to day business operations on a regular and recurring schedule.
  - Contractors shall provide evidence that 100% of its Supplemental Work Employees have passed a Drug and Alcohol Test within seven days prior to starting work at an LKE site.
  - Contractors shall randomly Drug and Alcohol Test 5% of their total Supplemental Work Employee workforce working at all LKE sites each month.
3. Transient Work is work provided by a Contractor through its employees (Transient Work Employees) to perform limited duration or ad-hoc specialized tasks, at one or more LKE sites. If an employee is to be at one or more LKE sites on a regular basis or has a regular work schedule at or across one or more LKE sites (other than for limited duration or ad-hoc specialized tasks), that employee will be treated as a Supplemental Work Employee and not a Transient Work Employee.
  - All (100%) of Transient Work Employees will be Drug and Alcohol Tested within seven days prior to starting work at an LKE site.
  - Contractors shall randomly Drug and Alcohol Test 10% of their total Transient Work Employee- workforce working at all LKE sites each month.
  - Transmission and Distribution Transient Work Employees performing work during system restoration events (i.e. storms.) will be exempt from LG&E and KU Drug and Alcohol Testing requirements.
  - If Transient Work Employees are moving from LKE site to LKE site in work assignments, another pre-work Drug and Alcohol Test is not required. These employees will remain in the 10% per month random-testing pool of that Contractor, while working at LKE sites.
  - If a Transient Work Employee leaves all LKE sites, but returns to an LKE site within 30 days, another pre-work Drug and Alcohol Test is not required. These Transient Work Employees will remain in the 10% per month random-testing pool of that Contractor.

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<sup>1</sup> As used in this document, the term “employees” means all individuals who perform work on behalf of a Contractor at one or more LG&E and KU sites, including, without limitation, employees of Contractor, independent Contractor s, leased employees, etc.

<sup>2</sup> As used in this document, the term “LKE” means Louisville Gas and Electric Company and/or Kentucky Utilities Company.

<sup>3</sup> As used in this document, the term “LKE site” means any property owned or leased by LKE, any property on which LG&E and/or KU has an easement, license, or other right to enter or use or on which LG&E and/or KU has any facilities or equipment, and any property in the immediate vicinity of any of the foregoing.

4. Employees that fall under federal regulatory testing requirements dictated by the Department of Transportation (DOT), Federal Motor Carrier Safety Administration (FMCSA), or Department of Pipeline Hazardous Material and Safety Administration (PHMSA) will be subject to those requirements and will not be subject to the LG&E and KU Drug and Alcohol Testing requirements.
5. Contractor shall promptly perform a Drug and Alcohol test on each Supplemental Work Employee and each Transient Work Employee (i) who contributes to an incident or dangerous condition or cannot be completely discounted as a contributing factor to an incident or dangerous condition which involves actual or undue risk of death or off-site medical treatment of any individual or material property damage (ii) or for which there is reasonable suspicion or probable cause of use or impairment.
6. Pre-employment testing and the testing referred to in paragraphs 4 and 5, above will NOT be included in calculating the random testing percentages required above.
7. To determine the number of employees subject to random testing each month, the number of applicable employees will be multiplied by the applicable percentage and the result will be **rounded up** to the next whole employee. For example, if the result of the multiplication is 4.3, the Contractor should round up that number to 5 employees. Further examples: assume that a Contractor has 75 Supplemental Work Employees working on LKE sites in a given month. Contractor is required that month to randomly select and Drug and Alcohol Test 4 employees ( $5\% \times 75 = 3.75$  rounds up to 4) of its Supplemental Work Employees and provide evidence of the results of the test for each. Assume that in the following month that same Contractor has 90 Supplemental Work Employees working on LKE sites. The number for that month will be 5 employees ( $5\% \times 90 = 4.5$  rounds up to 5).
8. The Contractor is responsible for all testing and administration costs associated with LKE's Drug and Alcohol Testing requirements; provided, that for Supplemental Work Employees only, Contractor may bill LKE for the reasonable straight times hours for the time that such employee is away from scheduled duties to participate in a random Drug and Alcohol Test (Contractor may not bill Company any overtime hours associated with such test).
9. For Contractors with five or fewer Supplemental Work Employees or five or fewer Transient Work Employees, Contractor may seek a limited waiver for random testing requirements by consulting its LKE Safety Specialist.
10. Contractor shall submit evidence of compliance with these requirements in the Avetta Database (i) monthly for all random tests and (ii) prior to the employee entering (or re-entering) any LKE site for any other test.

## **APPENDIX G**

### **HAZARDOUS CHEMICAL COMMUNICATION**

#### **Hazard Chemical Communication**

The following is a list of Hazardous Chemicals and atmospheric contamination that may be encountered at LG&E and KU sites. It should in no way be deemed as the only contamination that could be encountered at LG&E and KU. Always be aware of the contamination that could be encountered and become familiar with their Safety Data Sheets (SDS).

<b><u>Chemical Name</u></b>	<b><u>Formula</u></b>	<b><u>Trade Name</u></b>	<b><u>Description</u></b>
Anhydrous Ammonia	NH <sub>3</sub> (99-100%)	Ammonia, Anhydrous	Liquid colorless gas or compressed liquid with extremely pungent odor. Targets eyes, skin, and respiratory system.
Arsenic	AS	Organic Arsenic	Targets skin, kidneys, liver, and resp. system.
Asbestos		Hydrated Mineral	Fibers found in insulation, gaskets, packing, vinyl asbestos flooring, roofing, and other materials. Targets respiratory system. May cause lung cancer.
Carbon Dioxide	CO <sub>2</sub>	Carbonic Acid Gas Dry Ice	Targets respiratory system and cardiovascular system
Carbon Monoxide	CO	Flue gas/ Monoxide	Colorless, odorless gas. Targets lungs, blood, can be immediately fatal.
Chromium Hexavalent	Cr(VI)	Hexavalent Chromium	Metal that targets the respiratory tract, skin, and eyes. Irritant.
Hydrogen Sulfide	H <sub>2</sub> S	Sewer gas Hydrosulfuric Acid	Colorless gas with strong rotten egg odor, quick loss of sense of smell, can be immediately fatal.
Hydrogen	H <sub>2</sub>	Liquid Gas	Colorless, odorless, targets eyes, skin respiratory system
Lead	Pb	Lead metal	Heavy soft gray metal. Targets eyes, kidneys, and blood.
Ozone	O <sub>3</sub>	Triatomic Oxygen	Colorless, targets eyes and respiratory sys.
Sulfur Dioxide	SO <sub>2</sub>	Sulfuric Acid	Targets eyes, skin, and respiratory sys.

## **APPENDIX H**

### **JOB BRIEFING GUIDANCE**

1. **Tasks - work procedures involved** – Identify the task that is to be performed and who will be performing the task including sufficient details.
2. **Hazards associated with job** – Identify the hazards associated with the task. (Ex. Line of fire, uneven/slippery working surfaces, working aloft in proximity of energized conductor, cold temperatures, driving vehicles etc.)
3. **Hazard control procedures** – Identify ways to mitigate each risk identified for the task. (Ex. Don't work under bucket while working aloft, be aware of slips and trips, ensure appropriate cover/MAD followed, appropriate speed for road and conditions, following distance for type of vehicle, eliminate distractions, cover exposed skin, take warm up breaks etc.)
4. **Personal Protective Equipment (PPE)** – Identify the proper PPE for the work procedures used to perform the task. (Ex. Hardhat, safety glasses, steel toe shoes, gloves/sleeves, overshoes, fall protection, cutting chaps, ear plugs, face shield etc.)
5. **Special precautions** – Identify any special precautions associated with the task. (Ex. Working with capacitors/regulators, traffic control, new equipment/tools, etc.)
6. **Energy source control** – Identify the circuit for the work being performed and explain the procedure to control the energy (Ex. Circuit # - Location, Caution #, Clearance # etc.)

#### **Other tips to remember:**

1. Provide job briefing to additional crew members and any visitors joining your job.
2. Re-brief if the job scope changes or if additional hazards are discovered during the course of the work.

PPL CORPORATION, PPL RHODE ISLAND HOLDINGS, LLC,  
NATIONAL GRID USA, and THE NARRAGANSETT ELECTRIC COMPANY  
Docket No. D-21-09  
PPL Corporation and PPL Rhode Island Holdings, LLC's  
Responses to Division's Second Set of Data Requests  
Issued on June 11, 2021

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Division 2-63

Request:

Mr. Sorgi states (at 16:3-4) that PPL does not expect the Transaction to negatively impact current employees of Narragansett in Rhode Island. Provide all evaluations and analyses PPL has completed to support its statement that current employees will not be negatively impacted. What mitigation options does PPL plan to incorporate if these employees are negatively impacted?

Response:

PPL is committed to providing employees with competitive compensation and extensive choices in benefit plans and programs that support both their and their family members physical, emotional and financial well-being. PPL and National Grid have participated in numerous working sessions to better understand how PPL may be able replicate the current National Grid employee compensation structure (including base salary and incentives), benefits plans and programs where possible.

See also PPL and PPL RI's response to data request Division 2-64.

PPL CORPORATION, PPL RHODE ISLAND HOLDINGS, LLC,  
NATIONAL GRID USA, and THE NARRAGANSETT ELECTRIC COMPANY

Docket No. D-21-09

PPL Corporation and PPL Rhode Island Holdings, LLC's  
Responses to Division's Second Set of Data Requests  
Issued on June 11, 2021

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Division 2-64

Request:

Please describe the effect that the Transaction is expected to have on Narragansett pension plans, other post-retirement benefits plans, and other employee benefit plans.

Response:

PPL will assume pension obligations for The Narragansett Electric Company ("Narragansett") bargaining unit and management employees who participate in the National Grid Final Average Pay Pension Plan. For those Narragansett employees who participate in the National Grid Final Average Pay Pension Plan (traditional formula and cash balance formula), their pension benefits will transfer to a new PPL-sponsored pension plan which will substantially mirror the benefits, rights and features of the National Grid Final Average Pay Pension Plan. Both National Grid (current sponsor of the Narragansett plan) and PPL utilize the same Trustee for the pension assets. PPL will utilize the same third-party vendor as National Grid for benefit administration during a six-month transition period, and PPL's benefit administrator will oversee the administration of the pension plan following the transition period.

PPL will provide a 401(k) plan that will substantially mirror the benefits, rights and features of the National Grid USA Co. Incentive Thrift Plans I and II, which are currently available to Narragansett employees. Active Narragansett employees will have the opportunity to enroll in the new PPL-sponsored 401(k) plan and roll over their current investments, inclusive of any outstanding loans.

Those Narragansett employees who participate in a defined benefit pension plan other than the National Grid Final Average Pay Pension Plan will be eligible to participate in the new PPL-sponsored 401(k) plan that substantially mirrors the benefits, rights and features of the National Grid USA Co. Incentive Thrift Plans I and II.

PPL will provide medical, dental, vision and other employee welfare benefits that are substantially similar to the benefits provided by National Grid.

PPL will provide post-retirement medical and life insurance benefits for Narragansett bargaining unit and management employees who are currently covered by a National Grid post-retirement benefit plan. These benefits will be provided under PPL-created plans that substantially mirror the benefits, rights and features of the National Grid post-retirement benefit plans. A pro-rata share of applicable prefunded plan assets will be transferred to PPL trust accounts.