



## **BEST PRACTICE**

### **SUBJECT: ADMINISTRATIVE CONTROLS & INFORMATION TRANSFER**

**PRACTICE STATEMENT:** To eliminate injuries to personnel from improper job planning and risk assessment.

**PRACTICE DESCRIPTION:** Identify protection methods and risk mitigation techniques based on information obtained through information transfer and jobsite analysis. The information obtained through this process shall be provided to the employee in charge to supplement the field crew's job briefing.

- A. Pre-planning to begin at the pre-bid meeting.
- B. Preliminary job site analysis.
- C. The Contractor shall request information from the Host Employer so that the Contractor may be able to conduct adequate risk assessments prior to beginning and during operations. As a minimum this information shall include:
  - Nominal voltage of lines & equipment
  - Maximum switching transient voltage (TOV)
  - Presence of induced voltage
  - Presence of protective grounds and grounding conductors
  - Location of circuits and equipment, including electric supply lines, communication lines, and fire protective signaling circuits
  - The condition of protective grounds and equipment grounding conductors
  - The condition of structures, poles, and/or other facilities.
  - Environmental conditions related to safety
  - Other known system information related to safety, requested by the contractor such as incident energy, MAD distance, AR clothing.
- D. Knowledge of any change in the original work task and any other conditions or characteristics that may affect the safety of the workers.
- E. Line work on conductors or equipment shall be performed when they are de-energized or a portion is de-energized and grounded when possible.
- F. Information that is required of the contractor to be communicated to the host:
  - The contract employer shall advise the host employer of any unique hazardous conditions presented by the contract employer's work.
  - The contract employer shall advise the host employer of any unanticipated hazardous conditions found during the contract employer's work that the host employer did not provide.
- G. Examples of Host Employer Communication may include work orders, job prints, bid documents, and/or one-line diagrams. The contractor shall document communication (as stated in item "C" above) from the host employer.

**BENEFITS:**

- Eliminate injuries resulting from improper planning by ensuring key job hazards are identified and controlled.

**REFERENCES:**

National Electric Safety Code (NESC, ANSI C2 – Part 4)  
OSHA 29 CFR §1926.950 (c)  
OSHA 29 CFR 1910.269 (a)(3)

**Frequently Asked Questions**  
**Information Transfer**

1. Do I have to use the forms provided?
  - No, you may create your own documentation.
2. Do I have to sign the forms?
  - If you communicate unanticipated hazards back to the Host Employer you should sign the form and ask for their signature.
3. Who keeps the form?
  - The form goes to your contact at the Host Employer. Each party should keep a copy for their records.
4. What if Host Employer refuses to sign the form?
  - Make a note on form of the decision to not sign, make a copy and leave one with Host and keep one for contractor records.



### **Information Transfer Form Purpose:**

To ensure contractor request information from host employer

**Nominal voltages of lines and equipment crews will be exposed to:**

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**Assumed Maximum Switching Transient Voltage:**

| Nominal Voltage (kV) | Maximum per-unit Transient overvoltage |
|----------------------|----------------------------------------|
|                      |                                        |
|                      |                                        |
|                      |                                        |
|                      |                                        |

**Minimum Approach Distances:**

| MAD for Qualified Electrical Employees From Uncovered Conductors, Phases, or Equipment |                        |                       |
|----------------------------------------------------------------------------------------|------------------------|-----------------------|
| Voltages Between Phases                                                                | Phase to Ground M.A.D. | Phase to Phase M.A.D. |
|                                                                                        |                        |                       |
|                                                                                        |                        |                       |
|                                                                                        |                        |                       |
|                                                                                        |                        |                       |

**Arc Flash Clothing Requirements:**

| Work Location (i.e. Overhead Distribution Lines) | Distance to Exposed Energized Parts (i.e. Less than 6 ft) | Hazard/risk Category FR Clothing Required (i.e. Cat 1 (4 cal/cm <sup>2</sup> )) |
|--------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                  |                                                           |                                                                                 |

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|--------------------------------------------------------------------------------------------------|--|--|
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|                                                                                                  |  |  |
|                                                                                                  |  |  |
|                                                                                                  |  |  |
| Presence of hazardous induced voltages: Yes <input type="checkbox"/> No <input type="checkbox"/> |  |  |



|                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------|
| Presence of Protective Grounds and Equipment Grounding Conductors: Yes <input type="checkbox"/> No <input type="checkbox"/>            |
| The locations of circuits and equipment, including electric supply lines, communication lines, and fire-protective signaling circuits: |

**Known Conditions:**

|                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition of Grounds (i.e. Defective Substation grounds or grounding conductors, if known, are identified by the presence of a field tag, or in the Substation log book.):           |
| Environmental Conditions Related to Safety (i.e. Any known environmental conditions related to safety are noted in the work package presented at the time of request for proposal.): |
| Conditions of Poles and Structures (typical pole tags and meanings any additional information needed):                                                                               |

**Unanticipated hazardous conditions found during contractors work**

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If an alternate mode of communication used to transfer this information (text, phone call, verbally, etc.) the condition(s), date and name of person represented the host employer should be documented.

|                      |             |
|----------------------|-------------|
| <b>Contractor</b>    | <b>Date</b> |
| <b>Host Employer</b> | <b>Date</b> |



## **BEST PRACTICE**

### **SUBJECT: CRADLE-TO-CRADLE USE OF INSULATING RUBBER GLOVES AND SLEEVES**

**PRACTICE STATEMENT:** Protocols related to effective use of insulating rubber gloves and sleeves.

#### **PRACTICE DESCRIPTION:**

- A. When employees are working on energized circuits or equipment using the rubber glove method, insulating rubber gloves and sleeves rated for the exposure of the highest nominal voltage shall be worn cradle-to-cradle when working from an aerial platform.
  - Exception-Insulating rubber sleeves are not required when employees are working circuits with a potential of 600 volts or less if there is no upper arm exposure and the worker will not encroach the 5-foot primary zone.
- B. Electrical class rating of the insulating rubber sleeves shall meet or exceed the electrical class rating of the insulating rubber gloves when working on primary conductors.
- C. Company policies shall apply when the above conditions cannot be met. Alternative work methods ensuring worker safety shall be identified, communicated to all affected workers, implemented and documented as part of the Job Briefing process.

#### **BENEFITS:**

- Provides specific use requirements that are proven methods for reducing electrical contact injuries and fatalities.
- Provides for uniform use guidelines that can be applied industry wide.

#### **DEFINITIONS**

**Effective Cover Up** is used to describe the installation of phase-to- phase rated insulating protective cover on energized conductors and/or equipment of different potentials when the lineman is within reaching distance or in areas extended by handling conductive objects.

**Extended Reach** is used to describe being within five feet of energized conductors and/or equipment or having a conductive object within five feet of energized conductors and/or equipment.

### **Frequently Asked Questions Cradle to Cradle Gloves & Sleeves**

1. Can I swing the bucket out of the energized zone and remove Gloves and Sleeves in order to drink water, take a break, etc.?
  - No. The upper boom section shall be lowered to its lowest possible elevation or be repositioned to the cradle before gloves and sleeves may be removed.
2. Are there instances when gloves and sleeves may be removed when working in a bucket (cradle to cradle)?
  - Yes, examples include:
    - The upper boom section has been lowered to its lowest possible elevation or when the bucket has been repositioned to the cradle.
    - When the circuit has been de-energized, grounded and an EPZ has been established.
    - Refer to company policies for specific work procedures (i.e. terminations).
3. When ascending to perform work on a transmission line with energized under build, do I need gloves and sleeves while moving past the energized under build?
  - No, as long as the 5 ft. primary zone is not encroached.



## **BEST PRACTICE: INSULATE & ISOLATE**

### **SUBJECT: I&I TECHNIQUES FOR THE LIVE LINE TOOL METHOD ON DISTRIBUTION.**

**PRACTICE STATEMENT:** The effective use of Isolate and Insulate equipment and procedures to provide the necessary level of safety when performing Live Line Tool work on energized lines & equipment.

The employer must ensure that any employee who performs energized line work is qualified (See 29 CFR 1910.269 and 29 CFR 1926.950) through training and experience to perform the work assigned.

**PRACTICE DESCRIPTION:** Properly performed Insulate and Isolate (I&I) techniques used in conjunction with the necessary insulating live line tools allows qualified personnel to safely work on and around energized equipment and conductors.

#### **I&I Definitions:**

1. **Insulated:** (1) The use of Insulated Protective Equipment (IPE) to protect the line worker while working on or within 5 foot (including extended reach) of energized lines/equipment.
2. **Insulating Personal Protective Equipment (IPPE):** Rubber Gloves and Sleeves.
3. **Insulating Protective Equipment (IPE):** rubber blankets, rubber line hose, rubber hoods, plastic covers, etc.
4. **Isolate:** (A) Physically separated, electrically and mechanically, from all sources of electrical energy. Such separation may not eliminate the effects of induction. (B) Not readily accessible to persons unless special means for access are used.
5. **Minimum Approach Distance (M.A.D.):** The distances set forth in 29 CFR 1910.269. This distance is measured from the end of the line workers reach or from the end of any conductive object being handled by the line worker.
6. **Second points of contact:** Accidental/inadvertent contact made with any conductive object within your extended reach that could have a difference of potential and would allow current to pass through the body.

#### **I&I Best Practice: Energized Primary Live Line Tool Method**

1. Only workers who are qualified shall be permitted to work within M.A.D. using this best practice.
2. When working from an aerial lift/structure the 'IPPE for the Live Line Tool Method on Distribution Lines' Best Practice shall be observed. Any time an employee's unprotected

hands and/or arms are positioned within the MAD of exposed energized lines or equipment, appropriately rated rubber gloves and sleeves shall be worn or effective cover shall be applied.

3. Before getting into a position where the qualified line worker can reach into, extend any conductive object into, or extend any other part of the body into the M.A.D., approved and tested IPE/IPPE for the voltage to be worked shall be used to insulate/isolate energized conductors and/or other conductive parts at a different potential.
4. For URD equipment the criteria for the 'Lock to Lock' Best Practice shall be observed.
5. Approved IPE shall be installed in the order of 'nearest first' and removed in the reverse order.
  - a. Energized or de-energized part(s) may have to be temporarily covered in order to install IPE on all parts necessary to insulate/isolate the part that is to be worked on.
  - b. The part to be worked shall only be uncovered after all IPE has been installed in the work zone that will allow no contact with conductors or equipment at a different potential.
  - c. IPE shall be installed/removed in such a manner so that the worker is not exposed to contact from energized conductors or second points of contact.
  - d. The line worker shall **NEVER** turn their back on exposed energized conductors or second points of contact within M.A.D.

#### **BENEFITS:**

- Eliminate contact injuries.
- Eliminate electric arc flash injuries.
- Safely working on energized circuits and maintaining the reliability of the electrical system.

#### **REFERENCES:**

- **NJATC** – Effective Cover Up; interactive training.
- **NECA** – Safety Risk Management for the Electrical T&D Line Construction
- **IBEW** – Ten States Safety Manual
- **OSHA** – 1910.269, 1926.950; subpart V
- **ASTM** – F 968-93
- **ET&D Partnership** – Existing Best Practices
- **WISHA-296-45** – Electrical Workers
- **IEEE 100** – The Authoritative Dictionary of IEEE Standards Terms (seventh edition)

#### **Frequently Asked Question**

1. What training and skills must a qualified person (qualified line worker) possess?

A: OSHA 29 CFR 1910.269(a)(2)(i) states:

Employees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole top and manhole rescue), that are not specifically addressed by this section but that are related to their work and are necessary for their safety.

OSHA 29 CFR 1910.269(a)(2)(ii) qualified persons shall also be trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
- The skills and techniques necessary to determine the nominal voltage of exposed live parts,
- The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed, and
- The proper use [and selection] of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.

2. Does M.A.D. apply when using a live line tool?

A: YES.

3. What voltage separates distribution voltage from transmission voltage?

A: According to the definition set forth by IEEE 100 7<sup>th</sup> Edition: Electric power lines which distribute power from a main source substation to consumers, usually at a voltage of 34.5KV or less.

4. I am performing “Hot stick” work and need to encroach M.A.D. and perform a task by hand. What position do I need to be in to don my rubber insulating gloves and sleeves?

A. Performing “Hot Stick” work method does not require the use of rubber insulating gloves or gloves and sleeves. If during this operation a task requires the worker to enter into M.A.D, rubber insulating gloves and /or gloves and sleeves shall be donned prior to encroaching the applicable M.A.D. The worker shall maintain or move to a safe position so not to encroach M.A.D. during the donning of the PPE.



## **BEST PRACTICE: INSULATE & ISOLATE**

### **SUBJECT: I&I TECHNIQUES FOR THE RUBBER GLOVE METHOD.**

**PRACTICE STATEMENT:** The effective use of Isolate and Insulate equipment and procedures to provide the necessary level of safety when qualified line workers are working on energized lines & equipment.

The employer must ensure that any employee who performs energized line work is qualified through training and experience to perform the work assigned.

**PRACTICE DESCRIPTION:** Properly performed Insulate and Isolate (I&I) techniques used in conjunction with the necessary Insulating Personal Protective Equipment (IPPE) allows a qualified line worker to safely work on and around energized equipment and conductors.

- A. Only qualified line workers shall be permitted to encroach M.A.D. using this Best Practice.
- B. When working from an aerial lift the 'Cradle to Cradle' Best Practice shall be observed.
- C. Before getting into a position where the qualified line worker can reach into, extend any conductive object into, or extend any other part of the body into the M.A.D., properly rated IPE/IPPE shall be used to insulate/isolate energized conductors and/or other conductive parts at a different potential.
- D. For URD equipment the criteria for the 'Lock to Lock' Best Practice shall be observed.
- E. Properly rated IPE shall be installed in the order of 'nearest first' and removed in the reverse order.
  - Energized or de-energized part(s) may have to be temporarily covered in order to install IPE on all parts necessary to insulate/isolate the part that is to be worked on.
  - The part to be worked shall only be uncovered after all IPE has been installed in the work zone that will allow no contact with conductors or equipment at a different potential.
  - IPE shall be installed/removed in such a manner so that the worker is not exposed to contact from energized conductors or second points of contact.
  - The line worker shall **NEVER** turn their back on exposed energized conductors or second points of contact within M.A.D.

### **BENEFITS:**

- Eliminate contact injuries.
- Eliminate electric arc flash injuries.
- Safely working on energized circuits and maintaining the reliability of the electrical system.

**Definitions:**

**Effective cover-up** is used to describe the installation of phase-to-phase rated insulating protective cover on energized conductors and/or equipment of different potentials when the lineman is within reaching distance or in areas extended by handling conductive objects.

**Extended reach** is used to describe being within five feet of energized conductors and/or equipment or having a conductive object within five feet of energized conductors and/or equipment.

**Insulated:** (1) The use of IPE to protect the line worker while gloving energized lines/equipment.

**Insulating Personal Protective Equipment (IPPE):** Rubber Gloves and Sleeves.

**Insulating Protective Equipment (IPE):** rubber blankets, rubber line hose, rubber hoods, plastic covers, etc.

**Isolate:** (A) Physically separated, electrically and mechanically, from all sources of electrical energy. Such separation may not eliminate the effects of induction. (B) Not readily accessible to persons unless special means for access are used.

**Minimum Approach Distance (M.A.D.):** The distances set forth in 29 CFR 1910.269. This distance is measured from the end of the line workers reach or from the end of any conductive object being handled by the line worker.

**Second points of contact:** Accidental/inadvertent contact made with any conductive object within your extended reach that could have a difference of potential and would allow current to pass through the body.

**REFERENCES:**

- **NJATC** – Effective Cover Up; interactive training.
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- **IEEE 100** – The Authoritative Dictionary of IEEE Standards Terms (seventh edition)

### **Frequently Asked Questions:**

**1. What training and skills must a qualified person (qualified line worker) possess?**

- OSHA 29 CFR 1910.269(a)(2)(i) states:

Employees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole top and manhole rescue), that are not specifically addressed by this section but that are related to their work and are necessary for their safety.

OSHA 29 CFR 1910.269(a)(2)(ii) qualified persons shall also be trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
- The skills and techniques necessary to determine the nominal voltage of exposed live parts,
- The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed, and
- The proper use [and selection] of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near energized parts of electric equipment.

**2. How much cover is required if you are working on the center phase of a 3 phase circuit on cross arms?**

- If an employee(s) is working on the center phase on all configurations, all conductors, equipment and paths to ground within M.A.D., including extended reach, effective cover-up (IPE) must be installed for the given voltage being worked.

**3. If I'm working on the neutral (or at the neutral position) what IPE is required?**

- If an employee(s) is working on a neutral, (IPE) must be installed for the given voltage being worked and include all conductors, equipment paths to ground within M.A.D. as well as the employee's extended reach.

**4. What IPPE is required for working on energized 'secondary voltage' circuits?**

- If working from an insulated aerial lift workers shall follow the 'Cradle to Cradle' Best Practice. If working from a structure; insulating rubber sleeves are not required when line workers are working circuits with a potential of 600 volts or less if there is no upper arm exposure and the worker will not encroach the M.A.D. (including extended reach) to any primary conductors or equipment.

5. To work on de-energized parts, can a line worker remove their gloves and sleeves after everything is covered properly?

- No. Unless an equipotential zone (EPZ) has been established, at the work location, for the protection of that worker, gloves and sleeves shall be worn.

6. How much cover is required when working with non-insulated tools?

- When working with jumpers, tools, chains, conduit or cable slings, or other conductive devices, the employee's reach is extended the full length of that conductive device. When line workers are handling any such devices (including any tools, material or equipment that the worker may be holding) they shall properly install the properly rated IPE to the extent that all parts within the workers M.A.D. work area - that are at a different electrical potential than the part being worked – are insulated with IPE.

M.A.D. shall not be encroached unless:

1. The employee(s) is insulated or guarded from the energized conductor or equipment by use of properly rated IPE insulated rubber gloves/sleeves rated for the nominal voltage involved.
2. The energized conductor or equipment is insulated, isolated or guarded by properly rated protective equipment.
3. The employee(s) is insulated, isolated or guarded from any other conductive object(s).

7. How should a line worker be positioned when installing IPE?

- IPE should be installed from below the conductor(s). Correct positioning of the worker when applying cover-up is of utmost importance. You cannot work near or adjacent to a conductor and/or equipment that is uncovered if it is within your M.A.D. including extended reach.

When an employee(s) is able to reach past the IPE, one or more of the following may be occurring:

- The employee(s) may be standing too high on the pole.
- The aerial lift device may be positioned too high or too close.
- The employee(s) may be too close to the conductor and/or equipment.

8. How does a line worker know if the IPE/IPPE is fit for service?

- The following must be performed:
  - Selection of IPE/IPPE shall be for the nominal voltage to be worked.
  - All IPE/IPPE shall be inspected for any damage, wear or contamination that would compromise its ability to insulate or isolate the lineman from different potentials. If upon inspection IPE/IPPE is found to be defective, the equipment shall be identified and removed from service.

- Applicable service dates shall be observed.
- All IPE/IPPE shall be inspected immediately following any incident that could be suspected of having caused damage.



## **BEST PRACTICE SUBJECT: JOB BRIEFINGS**

**PRACTICE STATEMENT:** To provide a uniform method to conduct and document a task oriented job briefing and the review of critical mitigation information.

**PRACTICE DESCRIPTION:** The employee in charge shall discuss the tasks to be performed. The briefing shall be documented and include an explanation of how the tasks shall be achieved, hazards expected to be encountered, and steps to be taken to eliminate or control the hazards.

The documented Job Briefing shall identify each of the following:

- A. Tasks to be performed
- B. Any Critical Steps for the task
- C. How the crew shall complete the tasks with “Positive Control”: the key steps that must be done correctly to ensure the planned outcome of the task
- D. Existing worksite conditions or characteristics, including any information provided by the host employer
- E. Specific roles and responsibilities for each employee for completing the tasks
- F. Existing and predictable hazards
- G. Which situations require heightened awareness, e.g., Qualified Observer, Spotter, Confined Space Attendant, etc
- H. Hazard/Risk mitigation
- I. The required protective methods (where applicable) to be used, which include but are not limited to the following:
  - Insulation
  - Isolation
  - Grounding
  - Equal Potential Zone
- J. Personal Protective Equipment (PPE) required
- K. Emergency response information

Task specific job briefings shall be held:

- at the start of the work shift,
- at the location of the tasks,
- whenever tasks, key steps or scope of work changes,
- hazards differ from the original briefing,
- as additional personnel arrive at the job site, and
- after extended work pauses (work breaks, weather delay, etc.).

The briefing form shall have a provision for each employee to sign to verify they have participated in the briefing. Each ET&D Partnership company’s management shall establish a review process to ensure that the documented task briefing process is effective

## **Debrief**

At the end of the workday or prior to work beginning the following day, employees shall convene to debrief. Debriefing discussions may include successful or unsuccessful work methods, special site conditions to be considered, accomplishments and/or accolades, or goals moving forward. All debriefing discussions shall be noted on the task briefing form and lessons learned considered for all future work.

## **BENEFITS:**

- Provides for essential job safety planning guidelines and lists key elements.
- Incorporates use of a specific hazards identification process in the job planning process that will provide for enhanced controls for risks.
- The process and required documentation encourages inclusion and participation of job team members in the specific task hazard identification and mitigation associated with the overall job.
- Provides a process (Debrief) to review lessons learned from each work shift.

## **DEFINITIONS:**

**Positive Control** is the idea that one is aware of and in control of actions/steps and the outcomes of the actions/steps. A person/work crew maintains positive control when the outcome of all action/steps is intended and expected.

**Critical Step** is any action that will trigger immediate irreversible harm if that step or preceding actions are performed improperly or omitted.

**Task** for the purposes of this Best Practice is the sub-elements of a job. The processes necessary to complete the job

**Step** for the purposes of this Best Practice is the sub-element of a task. The detailed processes necessary to complete a task.

## **Frequently Asked Questions Job Briefings**

1. Is it sufficient to “pass the briefing form around” and collect signatures?
  - No, the intent of a Job Briefing is to initiate discussion about the work, involving all crew members.
  - Each Task shall be thoroughly discussed before work begins.
2. Must I do a Job Briefing if I’m working alone, and shall it be documented?
  - Yes, in order to ensure that hazards have been properly identified and that the countermeasures will be effective. This Job Briefing shall also be documented.
3. What should be done if someone who was not at the Job Briefing shows up such as an engineer, new crew member, property owner, or other visitors?
  - Communicate with crew the necessary steps they must take in order to maintain personnel safety.
    - Brief the new arrival, as necessary, with regard to the Job Briefing.
    - Request the new arrivals signature indicating their presence and their understanding of the hazards and countermeasures.
4. Can the Job Briefing be completed at the beginning of the workday and then used as a guide while conducting briefings to the crew throughout the day?
  - Yes, the Job Briefing document is a tool used to help facilitate continuing detailed communication with the crew regarding job tasks, hazards, and controls.
  - The intent of this Best Practice is to have specific discussions at periodic times during the day to address task related hazards real time.
  - If conditions change that might affect the safety of the crew members those changes must be documented on the briefing form and thoroughly discussed with crew members.



## **BEST PRACTICE**

### **SUBJECT: LOCK-TO-LOCK USE OF INSULATING RUBBER GLOVES AND SLEEVES**

**PRACTICE STATEMENT:** Protocols related to effective use of insulating rubber gloves and sleeves.

#### **PRACTICE DESCRIPTION:**

- When employees are working on energized circuits or equipment, rubber protective-insulating gloves and sleeves rated for the exposure of the highest nominal voltage shall be worn “lock to lock” when employees are working on underground electrical equipment. This includes when the employee manipulates the enclosure’s door.
- A complete, thorough inspection and hazard assessment must be conducted prior to any action involving manipulation of locking mechanism being performed. This hazard assessment could include the following based on geographical location: Visible damage, hinge condition, foundation (stability and general condition), rust, site conditions (landscaping), noise in the enclosure, oil present in and around enclosure, wildlife concerns (bees, snakes, etc.)
  - If no physical, sensory or environmental condition is present during the hazard assessment that would necessitate the use of gloves and sleeves to unlock the lock, gloves and sleeves may be omitted for unlocking. Gloves and sleeves are required for lock removal without exception.
- Rubber gloves and sleeves shall be worn when working on or within the extended reach of the conductor or piece of equipment.
- Electrical class rating of the insulating rubber sleeves shall meet or exceed the electrical class rating of the insulating rubber gloves.

#### **BENEFITS:**

- Provides specific use requirements that are proven methods for reducing electrical contact injuries and fatalities.
- Provides for uniform use guidelines that can be applied industry wide.

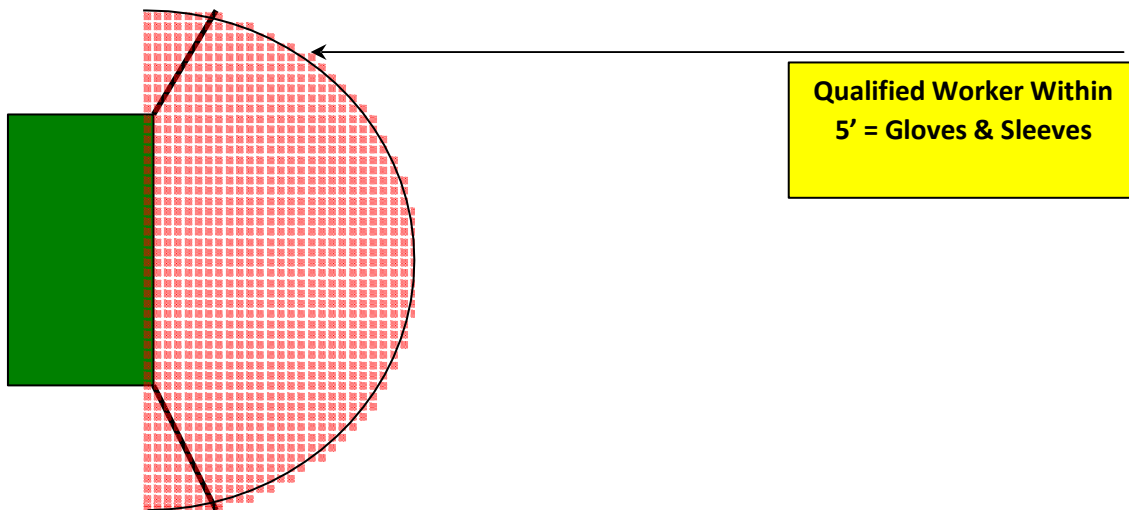
## **DEFINITIONS**

**Lock-to-Lock** is used to describe the utilization of rubber gloves and sleeves, when required, prior to the time the pad mounted equipment is unlocked until work is complete and the pad mounted equipment is relocked.

**Extended Reach** is used to describe being within five feet of energized conductors and/or equipment or having a conductive object within five feet of energized conductors and/or equipment.

### Frequently Asked Questions Lock-to- Lock

1. If I'm walking past the back of an open pad mounted transformer, do I need rubber insulating gloves and sleeves?
  - No, there is no exposure as long as the employee does not touch the cabinet.



2. Can insulating rubber gloves and sleeves be removed when terminating primary cable?
  - After secondary bushings and primary terminations have been effectively covered and the cable being terminated has been tested & grounded and the cable has been pulled beyond the face of the transformer, rubber gloves and sleeves may be removed.
3. Can I pull elbows by hand if I wear insulating rubber gloves and sleeves?
  - No. Live line tools shall be used for pulling elbows and switching in underground primary enclosures.
4. Does this best practice apply when work will be performed with live line tools?
  - Yes. Insulating rubber gloves and sleeves shall be worn when opening and closing the padmount equipment regardless of the work practice to be conducted. Additionally, if the initial assessment identifies noticeable hazards, gloves and sleeves shall be worn when unlocking the enclosure.



## **BEST PRACTICE**

### **SUBJECT: PRE-USE INSPECTION OF INSULATING PROTECTIVE EQUIPMENT AND INSULATING PERSONAL PROTECTIVE EQUIPMENT**

**PRACTICE STATEMENT:** Protocols related to the effective inspection of insulating protective equipment (IPE) and insulating personal protective equipment (IPPE).

**PRACTICE DESCRIPTION:** All IPE (rubber/plastic) and IPPE shall be inspected by a qualified employee prior to each use and immediately following any incident that can reasonably be suspected of causing damage.

Pre-use inspection must, at minimum, cover the following:

- All IPE/IPPE shall be inspected for any damage, wear or contamination that would compromise its ability to insulate the linemen from different potentials. If upon inspection; IPE/IPPE is found to be defective the equipment shall be identified and removed from service.
- Applicable service **dates and voltage rating** shall be **observed**.
- Insulating rubber gloves shall be given an air test along with an inspection completed by the qualified user.
- Insulating rubber sleeves shall be inspected by the qualified user.

### **BENEFITS:**

- Ensures insulating protective equipment can be used to protect at the rated voltage.
- Provides for uniform inspection guidelines for in-service inspection of insulating protective equipment.

### **DEFINITIONS:**

- Insulating Personal Protective Equipment (IPPE): Insulating rubber Gloves and Sleeves.
- Insulating Protective Equipment (IPE): Insulating rubber blankets, rubber line hose, rubber hoods, plastic covers, etc.

### **REFERENCES:**

ASTM F478 Standard Specification for In-Service Care of Insulating Line Hose and Covers

ASTM F479 Standard Specification for In-Service Care of Insulating Blankets

ASTM F496 Standard Specification for In-Service Care of Insulating Gloves and Sleeves

ASTM F1236 Standard Guide for Visual Inspection of Electrical Protective Rubber

## Products

OSHA 29 CFR 1910.137

OSHA 29 CFR 1926.97

National Electric Safety Code (NESC, ANSI C2 – Part 4)

## **Frequently Asked Questions**

### **Pre-Use Inspection of Insulating Protective Equipment**

1. Why are there two dates on insulating rubber goods?
  - One is the test date, and where applicable there will be an issue date.
2. Which date should I use?
  - This will depend on the contractor and state that you are working in. If you are not sure you should ask your supervisor.
3. What observed defects would prohibit the use of an insulated protective device?
  - Any equipment with any of the following defects may not be used:
    - A hole, tear, puncture or cut;
    - Ozone cutting or ozone checking (series of interlacing cracks);
    - An embedded foreign object;
    - Texture changes, such as swelling, softening, hardening, or becoming sticky or inelastic;
    - Any other defect that damages the insulating properties



## **BEST PRACTICE**

### **SUBJECT: QUALIFIED OBSERVER**

**PRACTICE STATEMENT:** A Qualified Observer shall be designated to provide timely warning while working on or within the minimum approach, including extended reach, of energized conductors or equipment (systems at and above 600V).

**PRACTICE DESCRIPTION:** A member of the crew shall be identified to act as a Qualified Observer to ensure clearances are maintained, PPE, and effective cover-up is installed.

- A. A Qualified Observer shall be designated to provide timely warning while working:
  - On or within the minimum approach including extended reach, of energized conductors or equipment (systems at and above 600V);
  - When using mechanical mobile equipment near energized conductors;
  - When moving energized conductors
- B. A Qualified Observer is defined as is an electrically qualified worker that can identify all hazards present to the crew working energized conductors. The Qualified Observer shall be capable of:
  - a. Distinguishing exposed live parts;
  - b. Identify nominal voltages;
  - c. Determine minimum approach distances;
  - d. Knowing safe work practices for working on, or near, energized lines and equipment;
  - e. Recognize electrical hazards to which workers will be exposed and skills and techniques to control those hazards;
  - f. Rendering immediate assistance in case of an accident
- C. The Qualified Observer shall not perform other duties and all work shall stop if the Qualified Observer can no longer perform observer duties.

## **DEFINITIONS**

- The term “effective cover up” is used to describe the installation of phase-to- phase rated insulating protective cover on energized conductors and/or equipment of different potentials when the lineman is within reaching distance or in areas extended by handling conductive objects.

The term “extended reach” is used to describe being within five feet of energized conductors and/or equipment or having a conductive object within five feet of energized conductors and/or equipment.

#### BENEFITS:

- Eliminate unintentional contact with energized components while working on, or near lines and equipment.
- Eliminate injuries from unrecognized hazards or changes in conditions.
- Clarify duties and provides guidance as to when observers are necessary.
- Provides guidance on observer qualifications.

**Frequently Asked Questions**  
**Qualified Observer**

1. Who may be a Qualified Observer?
  - Any crew member who meets the criteria of a qualified observer.
2. While personnel are performing tasks that would require a Qualified Observer, can the Qualified Observer have other duties?
  - No. While performing the functions of a qualified observer, the qualified observer shall not perform other tasks.



## **BEST PRACTICE: SAFETY AT HEIGHTS**

### **INTRODUCTION:**

The Partnership is committed to the practice of Safety at Heights wherever the potential exists for personnel falling from heights. The Best Practice will address fall hazards associated with, but not limited to, aerial tasks performed while working on wood/steel poles and metal/lattice structures. The Best Practices will utilize fall protection hierarchy of fall hazard elimination or control of the fall hazard. The following shall be considered in designing a fall protection solution: elimination or substitution, passive fall protection, fall restraint, fall arrest and administrative controls. First consideration shall be given to the elimination of fall hazards. Where elimination of the fall hazard is not practical effective control of the fall hazard shall be used at all times.

**SUBJECT:** Fall Protection when Performing Aerial Work

**PRACTICE STATEMENT:** Fall Protection Equipment (FPE) shall be used above 4 feet when ascending, while in the working position, when changing positions, descending, and/or performing rescue operations.

**PRACTICE DESCRIPTION:** Fall hazards associated with aerial work shall be assessed, and fall hazard mitigation plans developed. Fall Protection Device shall be “engaged” ground-to-ground

- A. Climbers shall be competent in the application of all necessary fall protection methods used for the fall hazard mitigation of the tasks that will be performed.
- B. The following information must be considered and addressed on the job briefing form when planning aerial work:
  - Identify tasks to be performed while working aloft.
  - Client/Owner Fall Protection policies, procedures and hazard analysis documentation as applicable.
  - Identify suitable anchorage points that are going to be used for the task to be performed.
  - Employers shall address rescue considerations and develop appropriate procedures that will allow successful performance of a given rescue technique for varied field conditions.
  - Determine/Identify necessary FPE and/or Work Positioning Equipment (WPE).
  - Determine climber qualification in the use of FPE and/or WPE.
- C. FPE/WPE shall be inspected and used in accordance with the manufacturer’s

instructions and guidelines.

- D. Company policies shall apply when the conditions of this Best Practice cannot be met. Alternative work methods ensuring climber safety shall be identified, communicated to all affected climbers, implemented, and documented as part of the job briefing process.
- E. Climbers shall be trained and competent in the care, use, and inspection of the equipment used to conform to this Best Practice. Climbers must be trained in the selection and safe use of the equipment/system. Training shall only be conducted by qualified trainers.
- F. Visual inspections shall be performed prior to, and during climbing, to ensure that the structure is in acceptable condition for the safe execution of the tasks to be performed.
- G. This Best Practice applies to all climbers including those that perform rescue. Rescue application should be predetermined as early as possible, but no later than during the pre-job briefing, based on rescue needs such as timeliness and consideration given to the characteristics of the structure that rescue is being performed on.

**BENEFITS: To eliminate injuries and fatalities associated with falls while performing work aloft.**

**REFERENCE:**

ANSI Z359.2 – 2007

CSA Z259.14-01

29 CFR 1910.66 App C

29 CFR 1926.500 – 503

BLM 1292-1

Best practices utilized by OSP members for lattice structures.

IEEE 1307 – IEEE Standard for Fall Protection for Utility

Work Example FHA attached