



SECTION 28

ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION



1. ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION POLICY AND PROCEDURES

- A. OSHA References: 29 CFR 1910.269
- B. **Policy:** it is the policy of Maul Electric, Inc. to comply with control of Electrical Power Generation, Transmission, and Distribution standards established by OSHA in 29 CFR 1910.269 and client established policies and procedures for Medium and High Voltages. The client policy and procedure will supersede this policy and procedure if it meets or exceeds the OSHA and Maul Electric, Inc. requirements.
- C. **Scope:** This procedure is intended to cover necessary safety precautions and procedures for servicing, maintaining, and operations of electric power generation, control, transformation, transmission, and distribution lines and equipment, which could cause injury to employees. This policy and procedure applies to all Maul Electric, Inc. employees, Maul Electric, Inc. subcontractors, and their employees.
- D. **Purpose:** Certain safety procedures are necessary and must be followed in the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. The types of installation covered by this section include the generation, transmission and distribution installations of electric utilities, as well as equivalent installations of industrial establishments.
- E. **Training:** Training will be provided to appropriate Maul Electric, Inc. employees and subcontractors in the application of this policy or client policy by Maul Electric, Inc. or its' clients. The use of outside professional resources may apply for the purpose of training to meet the requirements of the procedure.
1. Employees shall be trained in and familiar with the safety related work practices, safety procedures, and other safety requirements 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 the procedure but that are related to their work and are necessary for their safety.
 2. Employees shall be trained and competent in the skills and techniques necessary to distinguish exposed live parts of electric equipment.



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3. Employees shall be trained and competent in the skills techniques necessary to determine the nominal voltage of exposed live parts.
4. Employees shall be trained and competent in the minimum approach distance specified in 29 CFR 1910.269 corresponding to voltages to which the qualified employees will be exposed.
5. Employees shall be trained and competent in the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.
6. An employee shall receive additional training if new technology, new types of equipment, or changes in procedure necessitate the use of safety related work practices that are different from those which the employee would normally use, or if he or she must employ safety related work practices that are not normally used during his or her regular job duties.

- F. Failure to Comply:** Failure to comply with this policy and procedure or client established policy and procedure are grounds for immediate removal and subsequent discharge in accordance with the Maul Electric, Inc. Red Flag Violation Policy.
- G. Inspection:** An inspection for compliance with the Maul Electric, Inc. policy and procedures for Electric Power Generation, Transmission, and Distribution will be conducted and documented annually, by a company designated competent person.
- H. Deviations:** The Maul Electric, Inc. Safety Director may approve Deviations to this policy and procedures only and must be approved by the President of Maul Electric, Inc.

2. PROCEDURE

- A. General:** This procedure establishes the minimum requirements for working on or near **Medium or High** voltages whenever maintenance or servicing is done. It must be used to ensure that isolation of employees from all potentially hazardous energy sources, or where the unexpected energization or release of stored energy could cause injury.
- B. Compliance:** All employees are required to comply with the restrictions of the Policy and Procedure, as well as with the client restrictions and Policies, and with OSHA Regulation 29 CFR 1910.269 and its subparts.
- C. Enforcement:** Failure to comply with the Procedure will cause immediate removal from the work site and subsequent termination of employment.
- D. "Existing Conditions":** Existing conditions related to the safety of the work to be performed shall be determined before work on or near



electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching of transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, the condition of poles, environmental conditions relative to safety, and the locations of circuits and equipment, including power and communication lines and fire protective signaling circuits.

E. “Job Briefing: Maul Electric, Inc. Project Manager, Foreman, or designated representative, will conduct a job briefing with the employees involved before the start of each job. The briefing shall cover at least the following subjects:

1. Hazards associated with the job
2. Work procedures involved
3. Special precautions
4. Energy source controls
5. Personal protective equipment requirements
6. Additional job briefings shall be held if significant changes, which might affect the safety of the employee, occur during the course of the work.

3. Lockout/Tagout

A. Purpose: The use of lockout/tagout procedures for the control of energy sources in the installations for the purpose of electric power generation, including related equipment for communication or metering. Locking and tagging procedures for the deenergizing of electric energy sources, which are used exclusively for the purposes of transmission and distribution, will follow.

Note 1. Section 5 of the Maul Electric, Inc. Control of Hazardous Energy and Ref: OSHA 29 CFR 1910.147, 333, and 417 with regards to control of hazardous energy will also be deemed to comply with this section if the procedures address the hazards covered by this section.

B, Hazardous Energy Control (Electric Generation): Before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is to be isolated from the energy source and rendered inoperative.

- 1) If an energy-isolating device is capable of being locked out, it shall be locked out. If it is not capable of being locked out, the use of a tagout system shall be used, providing the tagout system will provide full employee protection, the same as a lockout system would.
- 2) The tag shall be installed at the same location, as would a lock.
- 3) In demonstrating that the level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a



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lockout program, there shall be additional elements used as necessary to provide the equivalent safety available from the use of a lockout device. Additional elements to be considered shall include the implementation of additional safety measures such as:

- a) Removal of an isolating circuit element, blocking of controlling switch
- b) Opening of an extra disconnecting device
- c) Or the removal of a valve handle to reduce the likelihood of inadvertent energizing

C.. Training: Training shall be provided to ensure that the purpose and function of the energy control program are understood by the employees and that the knowledge and skills required for the application, usage, and removal of energy controls are acquired by employees.

- 1) Each employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in isolation and control
- 2) Each employee shall be instructed in the purpose and use of the energy control procedure
- 3) All employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

D. Tags: Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.

- 1) When a tag is attached to an energy isolating means it is not to be removed without authorization of the authorized person responsible for it, and it is never bypassed, ignored, or otherwise defeated.
- 2) Tags must be legible and understandable by all authorized employees, affected, and all other employees whose work operations are or may be in the area, in order to be effective.
- 3) Tags and their means of attachment must be made of materials, which will withstand the environmental conditions encountered in the workplace.
- 4) Tags must be securely attached to energy isolating devices so they cannot be inadvertently or accidentally detached during use.

E. Locks: Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided for isolating, securing, or blocking of machines or equipment from energy sources.

- 1) Lockout devices and tagout devices shall be singularly identified;



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- a) Shall be the only device used for controlling energy
 - b) And may not be used for other purposes
- 2) Lockout devices and tag devices shall be capable of withstanding the environment to which they are exposed, for the amount of time that they will be exposed.
 - a) They shall have a minimum locking strength no less than 50 pounds.
 - 3) Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or metal cutting tools.
- F. Procedures:** Established procedures for the application of energy control (Lockout/Tagout) shall include the following elements and actions, and these procedures shall be performed in the following sequence:
- 1) Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the following:
 - a. Type and magnitude of the energy
 - b. The hazard of the energy to be controlled
 - c. Method or means to control the energy.
 - 2) The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment.
 - a. An orderly shutdown shall be used to avoid any additional or increased hazard to employees as a result of the equipment stoppage.
 - 3) All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.
 - 4) Lockout or tagout devices shall be affixed to energy isolating device by authorized employees.
 - 5) Lockout devices shall be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position.
 - 6) Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
 - 7) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy



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- shall be relieved, disconnected, restrained, or otherwise rendered safe.
- 8) Before starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergizing of the machine or equipment have been accomplished. *Check your testers on a known live circuit, then check the circuit in question, then check your testers again on a known live circuit! Be Sure!*
 - 9) Release from lockout/tagout
 - a) Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the work area shall be inspected to ensure that nonessential items have been removed and that the machines or equipment components are operational.
 - b) The work area shall be check to ensure that all employees have been safely positioned or removed.
 - c) After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the devices have been removed.
 - d) Each lockout or tagout device shall be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device.
 - e) However, if the employee is not available to remove it, the device may be removed under the direction of the Maul Electric, Inc. Safety Director, providing that specific procedures are followed and documented with regards to OSHA 29 CFR 1910.269 Paragraph D Section 7.