Section 16A. Lockout and Tagout Program

1. In the course of their duties, personnel at the TFREC may need to secure controls, switches, and equipment in order to prevent injury caused by the sudden, unexpected start-up or release of any hazardous energy.

2. The purpose of this program is to achieve the following objectives:
   a. The elimination of injuries caused by sudden, unexpected start-up of plant, departmental, or research equipment during maintenance or production activities.
   b. The assurance of a positive method to eliminate existing or stored energy available to plant, departmental or research equipment during maintenance or production activities.
   c. The establishment of standard procedures for the application of the department’s lockout system.

3. Lock Distribution and Lockout Procedures:
   a. Every person performing maintenance tasks at the TFREC will be issued a personal lock. Each lock will have only one key issued in accordance with the procedures in this program.
   b. Practices to be followed for work on exposed deenergized parts:
      (1) This section applies to work on exposed deenergized parts or near enough to them to expose the employee to any electrical hazard they present. Conductors and parts of electric equipment that have been deenergized but have not been locked out or tagged must be treated as energized parts, and WAC 296-306A-376 applies to work on or near them.
      (2) While an employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts must be locked out or tagged or both according to the requirements of this section. The requirements must be followed in the order in which they are presented.

      “Fixed equipment” means equipment that is fastened or connected by permanent wiring methods.

      Note: Lockout and tagging procedures that comply with WAC 296-306A-320 will also be deemed to comply with WAC 296-306A-37807 through 296-306A-3717 if:
      • The procedures address the electrical safety hazards covered by this part.
      • The procedures include the requirements of WAC 296-306A-37813(4) and 296-306A-37815(2).

   c. A written copy of the lockout-tagout procedures will be maintained and made available for inspection by employees and the Department of Labor and Industries. These written procedures may be in the form of a copy of WAC 296-306A-37807 through 296-306A-37817.
d. Practices to follow for deenergizing equipment:

(1) Safe procedures for deenergizing circuits and equipment must be determined before circuits or equipment are deenergized.

(2) The circuits and equipment to be worked on must be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, must not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment must not be used as a substitute for lockout and tagging procedures.

(3) Stored electric energy which might endanger employees must be released. Capacitors must be discharged and high capacitance elements must be short-circuited and grounded, if the stored electric energy might endanger employees. 

*Note:* Capacitors or associated equipment handled in meeting this requirement must be treated as energized.

(4) Stored nonelectrical energy in devices that could reenergize electric circuit parts must be blocked or relieved to the extent that the circuit parts could not be energized accidentally by the device.

NOTE: IF EQUIPMENT HAS MORE THAN ONE SOURCE OF HAZARDOUS ENERGY, OR CONTAINS STORED ENERGY, THEN A SPECIFIC WRITTEN LOCKOUT PROCEDURE IS REQUIRED FOR THAT EQUIPMENT.

e. How locks and tags must be applied:

(1) A lock and a tag must be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed, except as provided in subsections (3) and (4) of this section. The lock must be attached to prevent anyone from operating the disconnecting means unless he/she resorts to undue force or the use of tools.

(2) Each tag must have a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

(3) If a lock cannot be applied, or if tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

(4) A tag used without a lock must be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

(5) A lock may be placed without a tag only under the following conditions:
  - Only one circuit or piece of equipment is deenergized.
  - The lockout period does not extend beyond the work shifts.
  - Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.
f. Practices to be followed to deenergize. The requirements of this section must be met before any circuits or equipment can be considered and worked as deenergized.

1. A qualified person must operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.

2. A qualified person must use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test must also determine if any energized conditions exist as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment must be checked for proper operation immediately before and immediately after this test.

g. Practices to be followed when reenergizing equipment. These requirements must be met in the order given before circuits or equipment are reenergized, even temporarily.

1. A qualified person must conduct tests and visual inspections as necessary to verify that all tools, electrical jumpers, shorts, grounds, and other devices have been removed, so that the circuits and equipment can be safely energized.

2. Employees exposed to the hazards associated with reenergizing the circuit or equipment must be warned to stay clear of circuits and equipment.

3. Each lock and tag must be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag must be removed by a qualified person designated to perform this task if:
   - The employer ensures that the employee who applied the lock or tag is not available at the workplace; and
   - The employer ensures that the employee is aware that the lock or tag has been removed before resuming work at that workplace.

4. There shall be a visual determination that all employees are clear of the circuits and equipment.

**Working On or Near Exposed Energized Parts**

This section applies to work performed on exposed live parts (involving either direct contact or contact by means of tools or materials) or near enough to them for employees to be exposed to any hazard they present.

1. Only qualified persons may work on energized parts, electric circuit parts of equipment that have not been deenergized under the procedures of WAC 296-306A-37807. Qualified persons must be capable of working safely on energized circuits and must be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.
2. When employees are working near energized electrical service conductors operating at 750 volts or less (low voltage lines), employees must work in a manner to prevent contact with the energized conductors.

3. Employees must not enter spaces containing exposed energized parts, unless lighting is provided that enables the employees to perform the work safely.

4. Where lack of lighting or an obstruction prevents an employee from seeing the work to be performed, employees must not perform tasks near exposed energized parts. Employees shall not reach blindly into areas that may contain energized parts.

5. For working in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, the employer shall provide, and the employee must use, protective shields, protective barriers, or insulating materials that are necessary to avoid contact with these parts. Doors, hinged panels, and the like must be secured to prevent swinging into an employee and causing the employee to contact exposed energized parts.

6. Conductive materials and equipment that are in contact with any part of an employee’s body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If an employee handles long conductive objects (such as ducts and pipes) in areas with exposed live parts, the supervisor must institute work practices (such as the use of insulation, guarding, and material handling techniques) that will minimize the hazard.

7. Portable ladders must have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

8. Conductive articles of jewelry and clothing shall not be worn if they might contact exposed energized parts.

9. Where live parts present an electrical contact hazard, employees must not perform housekeeping duties near enough to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are provided.

10. Electrically conductive cleaning materials (including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) must not be used in proximity to energized parts unless procedures are followed that will prevent electrical contact.

11. Only a qualified person following the requirement of this section may defeat an electrical safety interlock, and then only temporarily while he or she is working on the equipment. The interlock system must be returned to its operable condition when this work is completed.

12. Training requirements in this section apply to employees who face a risk of electrical shock that is not reduced to a safe level by the electrical installation requirements of WAC 296-306A-362 through 296-306A-374.
a. Training contents must include the following:

   (1) Employees must be trained in and familiar with the safety-related work practices required by WAC 296-306A-376 through 296-306A-378 that apply to their job assignments.

   (2) Employees who are covered by this section but who are not qualified persons must also be trained in and familiar with any electrically related safety practices that are not covered by this standard but that are necessary for their safety.

   (3) Qualified persons must, at a minimum, be trained in and familiar with the following:
      • 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; and
      • The clearance distance specified in WAC 296-306A-376 and the corresponding voltages to which the qualified person will be exposed.

   Note 1: For the purposes of WAC 296-306A-376 and 296-306A-378, an employee must have the training required for a qualified person in order to be considered a qualified person.

   Note 2: Qualified persons whose work on energized equipment involves either direct contact or contact by means of tools or materials must also have the training needed to meet WAC 296-306A-376.

b. Classroom or on-the-job training must be provided. The degree of training provided must be determined by the risk to the employee.

13. Safety-related work practices must be used to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits that are or may be energized. The specific safety-related work practices must be consistent with the nature and extent of the associated electrical hazards.

   a. When an employee may be exposed to live parts, they must be deenergized before the employee works on or near them, unless deenergizing introduces other hazards or is infeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be deenergized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

   Note 1: Examples of other hazards include deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area.

   Note 2: An example of work that may be performed on or near energized circuit parts because of unfeasibility due to equipment design or operational limitations is testing of electric circuits that can only be performed with the circuit energized.
b. If the exposed live parts are not deenergized (for reasons of increased or additional hazards or unfeasibility), other safety-related work practices must be used to protect employees who may be exposed to the electrical hazards involved. Such work practices must protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object. The work practices must be suitable for the voltage level of the exposed electric conductors or circuit parts.

14. General protective equipment and tools:

a. When working near exposed energized conductors or circuit parts, each employee must use insulated tools or handling equipment if the tools or handling equipment might make contact with such conductors or parts. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material must be protected.

b. Ropes and handlines used near exposed energized parts must be nonconductive.

c. Protective shields, protective barriers, or insulating materials must be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts that might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they must be guarded to protect unqualified persons from contact with the live parts.

d. Altering techniques must be used to warn and protect employees from hazards that could cause injury due to electric shock, burns, or failure of electric equipment parts.

e. Safety signs, safety symbols, or accident prevention tags must be used where necessary to warn employees about electrical hazards that may endanger them, as required by WAC 296-306A-330.
SPECIFIC LOCKOUT PROCEDURE FOR

June 15, 1999

Authorization
This lockout procedure shall be used when performing service or maintenance on the above machines(s) or equipment.

The following employees have been trained and are authorized to use this procedure: Sonny Smith, Richard Bishop.

Failure to use this procedure or use of this procedure by an unauthorized employee will result in disciplinary action as described in the Accident Prevention Program.

Lockout Procedure Steps

1. Notify affected employees that the machine or equipment is going to be locked out for service or maintenance.
2. Turn off the machine.
3. Locate and deactivate the energy isolating devices in the following order:

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Magnitude</th>
<th>Lockout point</th>
</tr>
</thead>
</table>

4. Each authorized employee working on this equipment shall apply his/her lock(s) and information tag(s) to each energy isolation device listed above.

5. Dissipate or restrain any residual or stored energy in the following order:

6. Verify that the machine or equipment is disconnected from the energy source by first checking that no employees are exposed, then operating the normal controls or otherwise testing to ensure that the machine or equipment will not operate.

   Caution: Return the operating controls to neutral or off position after verifying the isolation of the equipment.
7. The equipment is now locked out. If it is necessary at any time to temporarily energize the equipment for testing or positioning purposes, then use the following steps:

- Clear the equipment of all tools, materials and employees.
- Remove the lockout device(s).
- Energize and proceed with testing or positioning.
- Deenergize the equipment and reapply the lockout device(s) using the procedure steps above immediately after testing or positioning.

**Release from Lockout**

8. Inspect the work area to ensure that all tools and materials have been removed and that guards are in place.

9. Verify the normal operating controls are in the off position or in neutral.

10. Check that all employees are out of the way.

11. Each authorized employee removes his/her locks/tags.

    Note: If an authorized employee is not available to remove his/her lock(s), the maintenance supervisor shall be contacted and the procedure listed in the lockout/tagout accident prevention plan shall be used before removing the lock.

12. Reenergize the equipment.

13. Notify affected employees that the servicing or maintenance is complete and the equipment is ready for use.