



LOCKOUT TAGOUT (LOTO) ENERGY ISOLATION

Integrated Water Services, Inc.
(the Company)



Purpose

The purpose of this program is to establish procedures for affixing appropriate lockout/tagout, energy isolating devices, or to otherwise disable machines or equipment to prevent unexpected energization, start up, or release of stored energy.

Scope

This procedure applies to all employees of the Company.

When work is performed by a subcontractor on a company site, the contractor's written safety program shall take precedence for their employees. However, subcontractors may adopt this procedure for their use.

Definitions

Affected employee: An employee whose job requires them to operate or use a machine or equipment on which servicing and maintenance is being performed under lockout/tagout, or whose job requires the employee to work in an area in which such servicing or maintenance is being performed.

Authorized employee: A person that performs lockout/tagout procedures on machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes authorized when that employee's duties include performing servicing or maintenance covered under this program.

Capable of being locked out: An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized: Connected to an energy source or containing residual or stored energy.

Energy isolating device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- A manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors and no pole can be operated independently, a line valve, a block and any similar device used to block or isolate energy.
- Push buttons, selector switches and other control circuit type devices are not isolating devices.

Lockout: The placement of a lockout device on an energy isolating device in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device: A device that utilizes a positive means, such as either a key or combination type lock, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal operation: The utilization of a machine or equipment to perform its intended operation.



Potential Energy Sources: Any source of gas, electrical, mechanical, hydraulic, pneumatic, chemical, gravity, steam, thermal, tension or other energy sources.

Servicing and/or maintenance: Workplace activities such as constructing, setting up, adjusting, inspecting, modifying and maintaining and/or servicing machines and equipment, where the employee may be exposed to an unexpected energization or startup of the equipment or release of a hazardous energy source.

Setting up: Any work performed to prepare a machine or equipment for performing its normal operation.

Tagout: The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until tagout device is removed.

Key Responsibilities

Managers and Supervisors

- Responsible to control and enforce this plan and to see that all their employees and contractors that are affected by lockout/tagout procedures, have the knowledge and understanding required for safe application, usage, and removal of all energy controls and devices.
- Ensure employees are trained and comply with the requirements of this program.

Employees

- Employees who are affected by this program are required to attend training on an annual basis.
- Are required to follow the provisions of this program.

Procedure

General

Only an authorized employee or employees performing the servicing or maintenance shall perform lockout or tagout.

Devices

Lockout Device - If an energy source can be locked out, a device that utilizes a lock to hold an energy isolating device in a safe position shall be used. Each site shall have the same type of lock as specified by Integrated Water Services.

Tagout Device – If an energy source cannot be locked out with a lockout device, then a tagout device shall be used. Tagout devices are a warning only level of protection and shall be weather and chemical resistant, standardized in color with clear written warning of hazardous energy i.e. Do Not Operate; Do Not Start; Do Not Energize, etc. Each site shall have the same style of tags specified by Integrated Water Services.



Specific Energy Control Procedures

Each manager or supervisor is responsible for developing specific step-by-step shutdown and startup procedures for a particular machine or piece of equipment in their respective area.

- A written, step-by-step isolation procedure for shutdown and startup shall be prepared for each type of machine or piece of equipment.
- This procedure shall include:
 - Equipment number if assigned
 - Equipment location
 - Energy Source(s) (i.e., electrical, hydraulic, gas pressure, etc.)
 - Location of isolating controls (i.e., breaker switches, valves, etc.)
 - Quantity of isolating controls
 - Quantity of locks required to isolate the equipment
 - Other hardware required to isolate the equipment (i.e. chains, valve covers, blocks, etc.)
 - List any residual energy required to be dissipated before work begins

Specific Sequence for Application of Energy Control

1. Notification

Authorized employees must notify all other affected employees of the application and removal of lockout/tagout devices. Notification shall be given before the controls are applied and before they are removed from the machine or equipment.

2. Preparation for Shutdown

Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled and the methods or means to control the energy.

3. Machine or Equipment Shutdown

The machine or equipment shall be turned off or shutdown using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

4. Machine or Equipment Isolation

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 the energy source.

5. Lockout/Tagout Devices and Application

- Each authorized employee shall have the proper number of locks and devices to be able to perform proper lockout/tagout procedures for machines or equipment that they may be working on.
- Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
- Lockout and tagout devices shall include name of individual placing device. Devices shall indicate the identity of the employee applying the device.
- Lockout devices shall be affixed in a manner to hold the energy isolating devices in a safe or off position.



- Tagout devices shall be affixed in a manner that will clearly indicate that the operation or movement of isolating devices from the safe or off position.
- Tagout devices used with energy isolating devices with the capability of being locked out shall be fastened at the same point at which the lock would have been attached. If a tag cannot be directly attached to the energy isolation device, it shall be located as close and as safely as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- Each energy source shall be locked out completely isolating the equipment.
- Isolating machines or equipment shall include, but are not limited to:
 - Pumps, compressors, generators, electric distribution, storage tanks, etc.
 - Each type of equipment to be isolated shall have specific procedures for isolation, i.e. for compressors: suction, discharge, power, starting, fuel, dumps shall be closed, locked and tagged out properly. The blow-down valve shall be opened, locked and tagged out properly. (NOTE): If compressor has a side stream hooked up, the side stream shall be closed, locked and tagged out properly.

6. Stored Energy and the Possibility of Reaccumulation

Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

If there is a possibility of re-accumulation of stored energy, verification of isolation shall be continued until the servicing or maintenance operation is completed, or until the possibility of such accumulation no longer exists.

7. Verification of Isolation

Prior to starting work on machines or equipment that have been locked or tagged out; the authorized employee shall verify that isolation and deenergization of the machine or equipment have been accomplished.

Procedures for Handling Multiple Groups of Workers Involved in a Group Lockout

A crew of authorized employees may use a group lockout or tagout device. This will afford the group of employees a level of protection equal to that provided by a personal lockout or tagout device. Procedures include:

- A tailgate meeting shall be conducted to review the lockout procedures and other information as required for safe work to continue – all crafts and effected departments shall be involved.
- An authorized employee will isolate the equipment and ascertain the exposure status of individual group members.
- All workers will then place their individual locks on the device's group lockout or tagout device after they have verified the procedure.
- An authorized employee has primary responsibility for a set number of employees working under the protection of a group lockout or tagout device. The authorized employee should ascertain the exposure status of individual group members. Each Integrated Water Services employee or contractor shall attach a personal lockout or tagout device to the group's device while he/she is working and then removes it when finished.
- During shift change or personnel changes, there are specific procedures to ensure the continuity of lockout or tagout procedures. These include:
 - In the event shift or personnel changes occur during maintenance and/or repair activities, the designated Integrated Water Services employee in charge shall take the necessary steps to maintain the continuity of the lockout/tagout protection. This includes maintaining that all



provisions in this procedure are adhered to and the transfer of lockout/tagout devices between authorized employees is accomplished.

- No work shall be allowed to proceed following personnel or shift change unless these requirements are met. The job supervisor must observe that all personnel or shift change locks or tags are properly transferred during the process.
- Before the last outgoing person is allowed to leave, they must remove their lock (or warning tag) and the incoming Integrated Water Services person shall affix their lock or (warning tag) to prevent the lock out device or tag warning device from ever not being locked or warning if a lock out device is not practicable.
- This also applies to all group lockout tagout situations.
- This also applies to all contract personnel working on Integrated Water Services or client projects.
- If any outgoing person leaves the site and their lock/tag is still attached, then follow Removal of Locks guidelines below.

Release from Lockout/Tagout

When servicing or maintenance is completed or when Lockout / Tagout devices must be temporarily removed, the equipment requires testing and the machine or equipment is ready for testing or to return to normal operating conditions, the following steps shall be taken, in this order:

- Check the machine or equipment and the immediate area surrounding the machine or equipment to ensure that all nonessential items such as tools have been removed and that the machine or equipment components are operationally intact.
- Check the work area to ensure that all personnel have been safely positioned or removed from the area.
- Remove the Lockout/Tagout device.
- Energize and proceed with testing.
- Deenergize and reapply control methods including Lockout / Tagout devices.
- Document the procedure by use of the completed isolation log and provide to supervisor for filing.

Removal of Locks

The authorized employee who applied the lock shall be the one to remove their lock. However, after all work has been completed, certain conditions may arise which prohibit this person from being present to remove the lock.

The following procedures shall be followed to allow for the removal of a lock that another person has applied:

- Every effort shall be made to contact the authorized employee who applied the lock to obtain the key(s).
- If the key(s) cannot be made available, the employee who requests removal of the lock shall contact their supervisor.
- The supervisor shall verify that every effort was made to contact the original authorized employee who applied the lock and to obtain the key(s).
- The employee removing the lock shall note on the Service Report that the lock(s) were removed with permission by supervisor.
- All reasonable efforts will be made by supervisor to notify that employee their lock has been removed, ensuring that the authorized employee has this knowledge before they return to work.
- If the equipment is client owned, the supervisor or employee requesting to remove the lock(s) shall contact the client to get the lock removed. Clients must remove their lock(s).
- NOTE: Integrated Water Services employees shall not remove any client locks.



Contractors

Contractors performing lockout procedures on Integrated Water Services property shall comply with this procedure. Contractors shall supply their own locks. Integrated Water Services shall initially lockout Integrated Water Services machines and equipment before the contractor will be allowed to apply their own lock in addition to the Integrated Water Services lock.

Periodic Inspections of the Energy Control Procedure

Periodic inspections of the energy control procedure are conducted and documented at least annually to ensure procedures and requirements are being followed. Periodic inspections of the energy control procedure must be conducted at least annually to ensure that the procedure is being followed.

The Integrated Water Services Safety Manager or their designee performs the inspection (it must be someone other than those actually using the lockout/tagout in progress). The inspector will produce a certified review of the inspection including date, equipment, and employees, and the inspection shall be documented. They will verify that:

- Each authorized and/or affected employee has been trained as required.
- Current procedures are adequate for performing complete isolation of equipment and resulting in a zero-energy state.
- A copy of the audit maintained on file at the managers/supervisor's office.

EMPLOYEE TRAINING

The training must include recognition of hazardous energy source, type and magnitude of energy available, methods and means necessary for energy isolation and control.

Each authorized employee shall receive adequate training.

All affected employees are instructed in the purpose and use of the energy control procedure.

Any other employees whose work operations are or may be in an area where energy control procedures may be utilized are instructed in the purpose and use of the energy control procedure.

Additional training includes:

- The purpose and use of energy control procedures.
- When tagout systems are used, employees shall also be trained in the following limitations of 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.
 - 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 to be bypassed, ignored, or otherwise defeated in any way.
 - Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
 - Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.



- Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
- Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

Retraining

Retraining shall be conducted whenever a periodic inspection reveals, or whenever Integrated Water Services has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

Training Documentation

Integrated Water Services shall certify that employee training has been accomplished and is being kept up to date. All training and/or retraining must be documented, signed and certified.

Lockout/Tagout Isolation Log

Integrated Water Services employees shall complete an isolation log prior to working on energized equipment or equipment with the potential for stored energy. The Lockout/Tagout Isolation log can be found at: www.ims.support.com/forms.

SAMPLE LOCK



SAMPLE TAG

