



## APPENDIX H. LOCKOUT/TAGOUT SAFETY PROGRAM SEPTEMBER 2022

### Purpose

VSC Fire & Security, Inc. (hereinafter "VSC") has established a Lockout/Tagout Safety Program for the purpose of controlling hazardous forms of energy and to prevent water loss related damage. Hazardous energy sources can include: mechanical, hydraulic, pneumatic, chemical, electrical, thermal, gravitational, water pressure and other energy sources.

This program addresses:

- The requirements for isolating both kinetic and potential energy prior to performing repair, adjustment, or removal services on equipment such as fire pumps, panels, or air compressors that can create electric hazards such as shock or arc flash.
- The performance of service, maintenance, or construction work on or near equipment that when energized has the potential to cause bodily injury from electrocution or injuries from being struck-by, crushed, pinched or caught-in-between moving and rotating parts of the equipment.
- The retrofitting, maintenance, service, or construction of active fire protection systems where the potential for unintended water discharge exists.

### Regulatory Scope

For operational facilities this procedure addresses the regulatory requirements under 29 CFR 1910.147. During the construction phase(s) this procedure addresses the regulatory requirements under 29 CFR 1926.417. VSC will comply with federal and state safety laws requiring deactivation of controls or operations of equipment and to render them inoperative prior to starting work.

### Definitions

Affected Employees are employees whose job requires them to operate or use a machine or piece of equipment that has been locked out for maintenance or repair, and those employees who work in the vicinity of a machine, or piece of equipment that has been locked out. VSC will train all other employees whose work operations are effected or may be affected by the energy control procedures and how it affects their work operations.

Authorized Employees are those employees authorized to lockout and/or tagout equipment, machinery, or fire protection systems.

### Training

#### Authorized Employee

VSC will train all employees whose job assignment requires them to isolate hazardous forms of energy. Employees performing lockout and/or tagout functions will be trained in the following:

- Recognition of applicable hazardous energy sources.
- Type and magnitude of the energy available.
- Methods and means necessary for energy isolation and control.
- Purpose and use of the energy control policy.
- Restriction and limitations of lockout and tagout devices.

Authorized Employees will also be trained on and follow procedures when removing lockout and/or tagout devices. This training will include the following:

- Inspection procedures to ensure that non-essential items have been removed and operational components are intact.

- Inspection procedures to ensure that all employees are safely positioned or removed from the area.
- Notifying employees who may be affected by the lockout and/or tagout.
- Removal of lockout and/or tagout devices.
- Proper notifications and procedures for de-energizing fire protection systems.

Note: When tagout systems are used, employees shall also be trained on the following limitations of tags:

- Tags affixed to energy isolating devices are warning devices only.
- Tags do not provide physical restraints.
- Tags attached to energy isolating devices may not be removed without authorization from the person responsible for placing the tag.
- Tags shall not be bypassed, ignored, or otherwise compromised.
- Tags will be legible, understandable, able to withstand environmental conditions, and be securely attached.

Any employee who does not comply with this training will be subject to discipline, up to and including termination of employment.

#### Recordkeeping:

VSC's Risk & Safety Department (hereinafter "Risk-Safety") will maintain training records. Records will include: employee name, training topic-to include course content and level of training (exposed employee or competent person training), date of training, certification (where applicable), and date of future training to maintain certification.

#### **Retraining Requirements**

When VSC has reason to believe that an authorized employee does not have the understanding and skill required to perform the lockout/tagout procedure, the employee will be retrained. Circumstances where retraining is required include, but are not limited to:

- Change in job assignments.
- Change in machines, equipment, or processes that present new hazards.
- Change in the lockout/tagout procedure.
- Any situations that arise in which retraining appears necessary to ensure that safe lockout/tagout procedures are followed.

#### **Communication (Affected Employees)**

VSC will ensure that the Authorized Employee(s) performing the control procedure, or his/her Supervisor, notifies all Affected Employees of the application and removal of lockout and/or tagout control devices. Notification will be given prior to applying the controls and before they are removed from the equipment or process.

The VSC District Office responsible for the project must coordinate VSC's work through the customer's site management personnel, as the work involved may require shutting down the customer's equipment, production operations, or facility. The customer's maintenance technicians are often times the most knowledgeable resource when identifying the controls specific to their equipment and operations. The VSC jobsite supervisor must establish and maintain contact with the maintenance technician to ensure operational processes are secured and safe for VSC employees to perform the work. Communication and coordination with the customer is essential and required to ensure that the lockout/tagout procedure is completed properly and communicated to all affected parties. This procedure may require VSC employees to complete the customer's lockout/tagout safety training.

#### Work on Water-based Fire Suppression Systems

When performing services on active water based fire suppression systems, VSC on-site personnel will:

- Ensure that the Owner and or General Contractor's representative has notified all departments/employees/occupants that the building will be without fire protection each day VSC's work on the fire protection system requires that the system is de-activated and locked out/tagged out; and
- Ensure the representative has notified the local fire department and their insurance carrier each day when the system has been shut down and again when the system is placed back in working condition; and
- Ensure the representative has authorized the shut down by signing the applicable VSC "Owner Authorized Daily Shut Down" waiver form; and
- Ensure the representative has approved a proper exterior location in which to direct controlled water discharge from the system.

### Type of Control Devices

Only authorized devices will be used for controlling hazardous energy sources. These devices will be approved by VSC management.

#### 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 of a circuit can be disconnected from all ungrounded supply conductors. In addition, no pole such as a line valve, a block, or any similar device used to block or isolate energy can be operated independently.

*Note: Push buttons, selector switches and other control circuit type devices are not energy isolating devices.*

#### Lockout Device:

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



#### Tagout Device:

A prominent warning device, such as a tag with a means of attaching it, which can be securely fastened to an energy isolating device. The warning device must be installed 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. The device will warn against hazardous conditions and will include a legend such as the following:

- Do Not Start.
- Do Not Open.
- Do Not Close.
- Do Not Energize.
- Do Not Operate.

The VSC supervisor will perform a site walk through with each Authorized Employee who will be performing the work. Each Authorized Employee will be assigned an individual lock and tag which he/she will install.



### Criteria for Energy Control Devices

Except where host facility procedures require otherwise, company specific devices will be provided for Authorized Employees and will be used to isolate, secure, or block the machine or equipment from energy sources. Devices will only be used for isolating equipment.

- Durable - The locking and tagging devices will be capable of withstanding the work and environmental conditions.
- Standardized - The locking and tagging devices will be standardized within VSC either by color, shape, or size. Locks shall be of good quality, constructed of hardened steel with one key, and shall be maintained solely by the VSC employee performing the work. A standardized, durable plastic "Danger: Out of Service" tag will be used.

- **Identifiable** – The information to be provided on the Tag will include, but will not be limited to: Date, Equipment Description, VSC Fire & Security's Phone Number, and the Name & Telephone Number of the VSC Employee who applied the Tag. In addition, the lockout and/or tagout device or an associated record (work permit) must include the VSC Fire & Security district office telephone number and the telephone number where the employee can be reached.
- **Substantial** - Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques. Tagout devices shall be substantial enough to prevent inadvertent or accidental removal with a minimum unlocking strength of no less than 50 pounds.

### **Energy Control Procedure – Lockout/Tagout Requirements**

Lockout and tagout will be conducted in the following order:

- **Step 1 - Preparation for Shutdown**
  - Identify all energy sources. The Authorized Employee or his/her supervisor will review the type of energy, its hazards and the methods to de-energize the hazardous energy source.
- **Step 2 - Machine or Equipment Shutdown**
  - Isolate the equipment by shutting down or disconnecting the affected machine, equipment, piping or system by:
    - Turning off or shutting down the equipment or machinery using specific procedures. If the machinery, equipment, or process is in operation follow normal stopping procedures (i.e. depress stop button, open toggle switch, or maneuver other mechanism(s) normally used to stop the machinery or equipment).
    - Moving switch or panel arms to the "Off" or "Open" positions and closing all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.
    - Disconnecting or isolating equipment to be worked on from all energy sources and releasing stored energy.
- **Step 3 - Machine or Equipment Isolation**
  - The Authorized Employee will ensure all energy-isolating devices are engaged so that the equipment is isolated from possible energy sources.
- **Step 4 - Lock and Tagout Device Application**
  - Once the energy has been effectively isolated from the machine or equipment the Authorized Employee will identify the appropriate control measures (locks/tags) to prevent the accidental or inadvertent energizing of the machine or equipment. The appropriate control measure will depend on the exposure.
  - Danger tags and locks shall be approved by the customer's safety representative and are to be installed prior to each and every time the VSC employee(s) will perform any type of work on or in the vicinity of the subject piece of machinery or equipment.
  - **Additional Important Considerations:**
    - A lock and tag will be used in combination whenever feasible and when permitted by the host facility. The use of tags alone will be limited to those instances where the use of a lock is not feasible or consistent with the host facility policy.
    - If it is not feasible to affix the tag directly on the energy isolation device, the tag will be located as close as possible.
    - On multiple trade lockouts, the locks and/or tags shall be programmed and governed by the plant safety representative.
- **Step 5 – Stored Energy**
  - Neutralize other energy:
    - Released stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/water systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system. For example: Lower All Suspended Parts, Vent Air Pressure From Pneumatic Lines, Drain or Bleed Hydraulic Water Lines, and Release or Block Spring Energy.
    - Where the chance of a re-accumulation of stored energy growing to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete.
- **Step 6 - Verification of Isolation**
  - Prior to working on machines or equipment that have been locked or tagged out, the Authorized Employee(s) will verify that isolation and de-energization has been accomplished. Acceptable methods to verify isolation and de-energization include:
    - Inspecting each movable part to see if it is at rest.
    - Using a meter to test the electrical circuit to ensure the power is off.
    - Activating the start-buttons or other mechanism(s) normally used to start the machinery or equipment to verify the power is disconnected.



Locate and test the correct start button or switch to verify equipment will not activate.



Equipment with control levers to activate mechanical parts must also be tested to verify machinery is inoperable.

- Checking to ensure valves are in the position indicated on the tag.
- Performing any other tests specifically required or recommended for the machinery or equipment.
- Visually inspecting to determine that the energy isolation was effective.
- Opening drain points in the isolated area following established procedures.
- Verifying that the equipment is inoperable and that there are no other controls that can reactivate the equipment. The person that attached the lock and tag device will check with the customer's site management personnel to make this verification. Making an educated guess can result in injury!

#### **Pressurized Water Control Procedure – Lockout/Tagout Requirements**

##### Type of Control Devices

Only authorized devices will be used for controlling active and residual water pressure. These devices will be approved by VSC management.

##### Energy Isolating Device:

A mechanical device that physically prevents the transmission or release of water, including but not limited to the following: A manually operated valve, flange, or other mechanical control device.

Lockout and tagout will be conducted in the following order:

- **Step 1 - Preparation for Shutdown**
  - Identify all isolation valves. The Authorized Employee or his/her supervisor will perform a visual walk through of the fire protection water supply system and identify the correct control valve specific to the zone where work will be performed. This procedure includes identifying all correct primary and secondary drains.
  - Provide on-site the required number of containers, of the correct size, to collect water from drains.
  - Provide on-site funnels, drain socks, hoses, or other devices to direct water flow.
  - A sure-off device must be available for each project when a de-pressurized system cannot be verified.
- **Step 2 – Fire Protection Shutdown**
  - Isolate the system by closing the valve or valves for the system.
  - Connect and check for proper fit drain hoses or attach other water flow controls to the proper drain points.
  - Position water containers or layout hoses to direct water to the predetermined and approved discharge area.
- **Step 3 – Water Supply Isolation**
  - The Authorized Employee will ensure all correct valves or controls are closed and the correct zone or system is isolated.
- **Step 4 – Depressurize and Drain System**
  - Open drain slowly.
  - Do not allow container to fill beyond the weight it can be manually moved without spilling.
  - If hoses and/or drains leak or rupture, shut off drain and replace or repair leaks immediately. Multiple VSC employees must engage in this practice to ensure at least one employee is dedicated to inspecting hoses and drains for leaks to avoid property damage or injury that will result from undetected, unintended water discharge.

### Re-Activating Fire Protection System

- The Authorized Employee will perform a visual walk through to ensure heads, piping and all other system component parts are properly connected and secure - prior to re-activating the system.
- An Authorized Employee will be posted to “monitor” system for leaks before opening water supply valve.
- Additional Important Considerations:
  - Depending on the size, configuration and multiple floor levels specific to the project site, multiple monitors may be needed.
  - The authorized VSC employee will open the supply valve slowly and maintain contact with the “monitor” until the system is re-activated and no leaks are detected.
  - The VSC on-site supervisor will confirm that the fire protection system main valve is in the open position and attach a valve seal that is properly recorded. He/she will also ensure that the owner or GC representative acknowledges that the system has been returned to service by signing the applicable VSC “*Owner Authorized Daily Shut Down*” form.

### Underground Pipe Control:

The following precautions will be taken prior to any work that involves construction or services of an in-ground, existing, active fire protection system.

- **Step 1 - Preparation for Shutdown**
  - Identify the correct isolation valve upstream from the location of the work. The Authorized Employee or his/her supervisor will perform a visual walk through of the fire protection water supply system and identify the correct control valve specific to the zone where work will be performed. Note: this may require the assistance of an owner representative familiar with the system.
  - Provide at the site an appropriate sized pump to remove any water that accumulates in the trench.
  - For trench or excavation of an in-ground system refer to Appendix M. “Excavation and Trenching Safety Program”, of the VSC Health & Safety Program for additional requirements and instruction.
- **Step 2 – Shutdown of water supply**
  - Isolate the system by closing the valve and attach a tag and locking device.
- **Step 3 – Water Supply Isolation**
  - The Authorized Employee will ensure that the correct valves or controls are closed and that the correct zone or system is isolated.
- **Step 4 – Depressurize and drain system**
  - Drain residual water from system slowly. Note: method of drainage such as fitting, flange, valve or other device is site specific for each project.
  - If water flow cannot be directed away from trench set up pump to remove water from the trench.
  - Ensure that no VSC employees are in the trench while draining system.
- **Step 5 – Enter trench to commence work**
  - Before the work on the system begins the Authorized Employee will ensure that all safety requirements found in Appendix M. “Excavation & Trenching Safety Program” are followed.

### **Removal of Locks and Tags**

Prior to the removal of any lockout and/or tagout devices the Authorized Employee will:

- Notify all Affected Employees.
- Inspect the work area for non-essential items to ensure that all components including machine guards are operationally intact.
- Inspect the work area to ensure that all employees are safely positioned.

Note: Should the employee who placed the lock and/or tag not be on-site at the time of the removal, the VSC Foreman or Field Superintendent shall verify that the lock and/or tag can be removed. He/she will also:

- Verify that the Authorized Employee who applied the lock is not at the facility.
- Make all reasonable efforts to contact the Authorized Employee.
- Ensure that the Authorized Employee is informed that the lock and/or tag have been removed, before the Authorized Employee returns to work at that jobsite.

Note: It is the VSC Field Superintendent and Foreman’s responsibility to ensure that the host facility’s procedures are updated to require VSC’s approval, prior to removal of Locks and Tags, to avoid these Locks and Tags being removed without the knowledge of VSC’s Authorized Employee.

### Testing or Positioning Equipment (jog mode)

In situations where there is a need to test or position the machine or equipment, the following will be implemented:

- Communicate the need to test the machine or equipment to Affected Employees.
- Clear the machine or equipment of tools and materials.
- Clear employees from the machine or equipment area.
- Clear the controls of locks and tags.
- Energize and proceed with testing or positioning.
- De-energize all systems and re-apply energy control measures.

### Outside Personnel Notification Requirements

VSC will inform all Affected Employees of VSC's specific lockout/tagout procedure. Notification will be given prior to applying the energy control devices (Locks and/or Tags) and prior to removing these devices from the machinery or equipment.

### VSC Sub-Contractors

VSC sub-contractors will at a minimum follow their own lockout/tagout procedure, which must comply with 29 CFR 1910.147, unless VSC's procedure is more stringent. VSC management is responsible for reviewing the sub-contractor's procedure to determine if it is acceptable to be followed. If VSC's procedure is more stringent, then VSC will coordinate with the sub-contractor to ensure compliance with 29 CFR 1910.147 and VSC's lockout/tagout procedure.

### Requirements While Working at a Host's Facility

- VSC will ensure that its employees performing any lockout/tagout procedures at a host company's facility will notify the host company's contact of VSC's specific lockout/tagout procedures. This notification will be given prior to applying the energy control devices (locks and/or tags) and prior to removing these devices from the machinery or equipment. VSC will, at a minimum, follow this procedure unless the host's procedure is more stringent. If the host's procedure is more stringent, then VSC will coordinate with the host to ensure compliance with the host's procedure.
- If the host's procedure is to be followed, VSC will ensure that VSC employees have been provided adequate training on those procedures, prior to implementation of the lockout/tagout process.
- When working at a host facility it is critical that VSC identifies through the host company's contact any multiple energy sources and that this information is communicated to VSC's Authorized Employee.
- Via discussion with the host's contact, VSC's Authorized Employee will confirm the process to follow in order to communicate to all Affected Employees when energy control devices will be applied and removed. Because of chains of commands followed at a host facility, the communication to Affected Employees could potentially occur through multiple channels, or not at all, if the process is not clarified up front with the host!
- The VSC jobsite Foreman or Field Superintendent will determine through communication with the host facility's plant safety representative the appropriate control device to be used at the host facility.
- The VSC Field Superintendent will use a Job Hazard Analysis form or check list to document site specific lockout/tagout procedures for each host facility. Risk-Safety will be contacted for assistance as needed.

### Group Control Devices

When service and/or maintenance is performed by a crew, craft, department or other group, a procedure must be utilized that provides a level of protection equivalent to that provided by the implementation of personal lockout or tagout devices. On multiple trade lockouts, they shall be programmed and governed by the plant safety representative. No lockout or tagout shall be removed unless the employee who placed them is present at the time of removal. **Exception: The originator is offsite and has verified to the plant safety representative that the equipment is safe and clear of tools, materials and debris.**

### Shift/Personnel Changes

In the event of a shift or personnel change while a machine or equipment is de-energized, the off-going employee(s) will inform the on-coming employee(s) of the lock and/or tagout conditions and the status of the work. Work required beyond one shift must be locked and tagged out by the oncoming shift.

