

<i>HEALTH AND SAFETY MANUAL</i>	
Title: Lockout/Tagout-Control of Hazardous Energy	
Approved by: Greg Savoy	4/04/13

1 Purpose/Scope:

This program establishes procedures for affixing appropriate lockout/tagout equipment to energy isolating devices and to otherwise disable machines or equipment to prevent unexpected energization, start up or release of stored energy to prevent injury or incident.

This program covers the servicing and maintenance of machines and equipment where the “unexpected” energization or start up of the machine or equipment, or the release of stored energy could cause an incident. This program establishes minimum performance requirements for the control of such hazardous energy. When work is performed on a non-owned or operated site, the operator’s program shall take precedence, however, this document covers Company employees and contractors and shall be used on owned premises, or when an operator’s program doesn’t exist or is less stringent.

2 Definitions/Responsibilities:

2.1 Definitions:

2.1.1 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.

2.1.2 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.

2.1.3 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.

2.1.4 Energized - Connected to an energy source or containing residual or stored energy.

- 2.1.5 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.
- 2.1.6 Energy source - Any source of gas, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy sources.
- 2.1.7 Hot tap - A procedure used in the repair, maintenance and service activities that involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or other appurtenances (note: 1910.147 (2) (iii) [B] [1] [2] [3]).
- 2.1.8 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.
- 2.1.9 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.
- 2.1.10 Normal operation - The utilization of a machine or equipment to perform its intended operation.
- 2.1.11 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.
- 2.1.12 Setting up - Any work performed to prepare a machine or equipment for performing its normal operation.
- 2.1.13 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.
- 2.1.14 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.

2.2 Responsibilities:

2.2.1 Managers/Supervisors are responsible 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.

2.2.2 Employees who are affected by this program are required to attend training on an annual basis.

3 Requirements:

3.1 Training and Communication:

3.1.1 Each authorized employee shall receive training in the recognition of applicable hazardous energy (lockout/tagout) sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

3.1.2 Each affected employee shall be instructed in the purpose and use of energy control procedures.

3.1.3 Employee Training:

Training is required for all field and shop employees before commencing work after they are hired.

Retraining is required every year for all employees, when there is a change in job assignments, a change in machines, equipment, or processes that present a new hazard, or when there is a change in energy control procedures.

3.1.4 **NOTE:** All training and/or re-training must be documented, signed and certified.

3.2 Energy Isolation:

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

3.2.2 The Company prohibits the use of “tagout” tags or “information” tags in lieu of locks.

3.3 Notification:

3.3.1 Authorized employee 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.

3.4 Preparation for Shutdown:

- 3.4.1 Before an authorized or affected employee shuts down a machine or equipment, the authorized employee shall have the knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means (locks) to control the energy sources.

3.5 Machine or Equipment Shutdown:

- 3.5.1 The machine or equipment shall be shut down using the procedures established for that machine or piece of equipment (see section 3.12).

3.6 Machine or Equipment Isolation:

- 3.6.1 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(s).

- 3.6.2 Stored or residual energy (such as that in capacitors, springs, elevated machines or equipment members, rotating flywheel, hydraulic systems, and air, gas, or water pressure, etc.) shall be dissipated or relieved by methods such as grounding, repositioning, blocking, bleeding down, etc.

- 3.6.3 The authorized employees performing the lockout procedure verifies/ensures that the equipment is isolated or disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the machine or equipment by operating the control(s) or by testing to make certain the equipment will not operate.

- 3.6.4 Isolating machines or equipment shall include, but are not limited to:

- Compressors.
- Suction, discharge, 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.

- 3.6.5 Cord and Plug Connected Electrical Equipment.

- Lockout will not be required for cord and plug connected electrical equipment when the following requirements are met.
- The equipment can be totally isolated from its energy source by unplugging the supply cord.

- The employee performing the servicing or maintenance on the equipment maintains exclusive control over the plug by keeping the end within arms reach or within the line of vision.

3.7 Lockout/Tagout Devices and Application:

3.7.1 Each authorized employee shall have the proper number of locks and devices to be able to perform proper lockout/tagout procedures for a minimum of two machines or equipment that they may be working on.

- Each energy source shall be locked out completely isolating the equipment.

- Lockout devices shall be affixed in a manner to hold the energy isolating devices in a “safe” or “off” position.

3.7.2 A 3” x 5” laminated tag stating “**DO NOT OPERATE**” or a similar statement shall be secured to each lock. The tag must identify the authorized employee, date and reason for the lockout.

3.7.3 An authorized employee will complete the isolation log after verifying isolation.

3.7.4 A crew of authorized employees may use a lockout gang box.

- An authorized employee will lockout and tagout all sources of energy; isolating the equipment.
- The keys for these locks will then be placed in a gang box.
- Each authorized employee working on this equipment will then place a lock and tag on the gang box after they have verified the lockout/tagout procedure.
- No keys will be accessible to unlock the sources of energy other than those locked in the gang box by all authorized employees working on the equipment.
- The crew leader or an assigned authorized employee shall be responsible of assuring the integrity of the lockout procedures including documenting lockout information passed along during a shift change.
- A tailgate meeting shall be conducted at each shift change to review the lockout procedures and other information as required for safe work to continue.

3.8 Stored Energy and the Possibility of Re-accumulation

3.8.1 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.

3.8.2 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.

3.9 Release from Lockout/Tagout:

3.9.1 When servicing or maintenance is completed or when LOTO 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:

- Check the machine or equipment and the immediate area surrounding the machine or equipment to ensure that all nonessential items have been removed and that the machine or equipment components are operationally intact.
- Replace any guards and safety devices that may have been removed.
- Check the work area to ensure that all personnel have been safely positioned or removed from the area.
- Verify that all controls are in neutral.
- Each authorized employee can remove their locks, only when they agree the machine or equipment is ready for operation. Note: The removal of some forms of blocking may require re-energization of the machine before safe removal can be done.
- Retain the completed isolation log and provide to supervisor for filing.

3.10 Removal of locks:

3.10.1 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: Company employees shall not remove any client locks.

3.11 Shift or personnel changes:

3.11.1 In the event shift or personnel changes occur during maintenance and/or repair activities, the designated Company 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.

3.12 Specific energy control procedures:

3.12.1 Each manager/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.

3.13 Contractors:

3.13.1 Contractors performing lockout procedures on Company property shall comply with this procedure.

3.13.2 Contractors shall supply their own locks.

3.13.3 The Company shall initially lockout company machines and equipment before the contractor will be allowed to apply their own lock in addition to the Company's.

3.14 Annual audits:

3.14.1 Each year the manager/supervisor, or his representative, will perform an inspection of the Lockout Program in their respective areas to verify the effectiveness of the program. An authorized employee other than the one(s) utilizing the energy control procedure being inspected shall perform the audit and shall verify that:

- Each authorized and/or affected employee has been trained as required.
- Any new equipment added has specific lockout procedures developed and documented.
- Current procedures are adequate for performing complete isolation of equipment and resulting in a zero energy state.
- The annual audit will be certified in writing and a copy of the audit maintained on file at the managers/supervisors office.

4 References:

4.1 OSHA CFR 29 1910.147, “The Control of Hazardous Energy” (lockout/tagout)

5 Exhibits:

L-2.1 Specific Equipment Lockout Procedure

L-2.2 429-1780 Specific Equipment Procedure Sticker

L-2.3 Isolation Log

Exhibit L-2.1 - Specific Equipment Lockout Procedures

Department _____

Equipment No. _____

Energy Source _____

Procedure For Shutdown And Isolation:

(List number of steps required to isolate machine or equipment - write N/A on lines not used or add additional steps if necessary)

STEP NO.

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____

Additional Information: _____

Prepared By: _____ Date: _____

(This procedure to be communicated to all authorized and affected employees and kept on file at location of machine or equipment)

WARNING

MINIMUM LOCK/OUT – TAG/OUT PROCEDURES

When working on this compressor package the following items must be LOCKED OUT & TAGGED OUT. Residual pressure must be blown down. Open all valves on surge bottles and piping to relieve any pressure that may be trapped.

Inlet Suction Block Valve

Discharge Block Valve

Fuel Gas Valve

Start Gas Valve

Liquid Dump Line

Blow Down (Lock Open)

Side Stream (For Units Set up with Side Streams)

When working on the compressor each person must lock and tag the compressor package!

Exhibit L-2.3 - Isolation Log

Date Of Isolation: _____
Description of Work: _____
List of Equipment out of Service: _____
Necessary Requirements of Clear Isolation: _____

Authorized Employee Signature:

Person Continuing Work Signature:

Locks/Tags for GROUP LOCKOUT or Multiple Locks/Tags

Lock # or Tag	Date Installed	Date Removed	Print Name (for Group Lockout)	Signature

(If additional space is needed, please attach an additional page)