

Delta Services EHS Procedure		Document No: EHSP 15.1	Page: 1 of 13
Lockout and Tagout		Supersedes: 08-27-14	Rev. 3
Delta Services EHS	Approval: jbrown@deltaservicesllc.com	Previous Rev. Date: 08-27-14	Current Revision Date: 02-19

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1.0 PURPOSE AND SCOPE

The purpose of this Corporate Environmental, Health and Safety Procedure (EHSP) is to establish minimum procedures to ensure the safety and health of personnel who may work on any type of equipment capable of being energized or storing energy.

This EHSP applies to all employees and subcontractors, who may be required to work on this type of equipment or otherwise be exposed to the unexpected energization of this equipment.

Only trained and authorized employees may perform lockout tagout operations.

2.0 RESPONSIBILITIES

Responsibilities specific to this EHSP include the following.

2.1. Site Manager

The Site Manager shall verify that all requirements specified in this work instruction have been met prior to authorizing a supervisor to remove an authorized person's lockout device.

The Site Manager shall assure that annual and post-incident reviews, as defined below, have been performed.

2.2. Site Supervision/Foreman

It is the responsibility of each person, who supervises employees that perform work covered by this procedure, to:

- Train employees in the recognition of hazardous energy sources and the method and means of isolating such sources.
- Monitor the work to verify compliance with this procedure.

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- Ensure that adequate supplies of energy isolating devices and lockout devices, i.e., locks, tags, etc., are readily available.
- Ensure all potentially hazardous energy sources have been identified and are deenergized, bled off, isolated and locked out properly.
- Confirm that each job is properly prepared by Operations 6and/or client personnel prior to implementing lockout and tagout procedures.
- Determine the best lockout method (individual or group) for each lockout and tagout operation.
- Supervise all group lockout activities. Ensure that annual LOTO review is conducted and documented to assure compliance with this EHS procedure.

2.3. Authorized Employees

It is the responsibility of all authorized employees performing work covered by this procedure to:

- Assure they place their own personal lock on all sources of potentially harmful energy prior to starting work.
- Remove all locks once work is complete
- Notify supervisor/foreman of any issues, concerns, or questions that arise

3.0 DEFINITIONS

Affected Employee	A person whose job requires him/her to operate or use machines, equipment, or process on which service is being performed under the lockout and tagout program, or whose job requires him/her to work in an area where such service is performed.
Authorized Employee	A person who is authorized to lock out and tag out machines, equipment, or process in order to perform service or maintenance work on that machine, equipment, or process.
Electrical Plug and Connector Lockout Box	A box specifically designed to lock out electrical plug assemblies or, in the case of engine driven equipment, its battery cables.
Energy Sources	Electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other source.
Energy Isolation Device	A mechanical device that provides a positive means of control to prevent the transmission or release of energy. Examples of these devices include circuit breakers, disconnects, pins, blinds, blanks, valves, blocks, and double block and bleed. They do not include secondary controls such as start buttons or controls that regulate valves.
Group Lockbox	A box or similar device provided for the placement and safekeeping of keys used to secure energy isolation devices in a group lockout. Group lockboxes are generally clearly labeled as to their purpose, are tamper proof and are capable of being locked by one lockout lock or a multiple gang attachment.
Group Lockout	A procedure which provides a level of protection equivalent to that provided by a personal lockout or tagout device, when servicing and/or maintenance is performed by a crew, department, or other group.
Lockout	The placement of a lockout device—usually a lock—on an energy isolation device to ensure that the energy isolating device and the equipment being controlled may not be operated until the lockout device is removed.

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Lockout Device	A device used to secure an energy isolation device in a particular position (valve handle covers, switch covers, or circuit breaker devices) in such a way that the position of the energy isolation device cannot be changed without the removal of the lock out device.
Point(s) of Protection	Point or place where a lockout device has been placed on an energy isolation device to protect employees from the hazardous release of energy.
Specific Energy Control Procedure	A written procedure that details specific actions to be taken to control hazardous energy during servicing or maintenance. A specific lockout written procedure, a Safe Plan of Action or job safety analysis specific to the machine, equipment, or process being worked on are examples of acceptable specific energy control procedures.
Tagout	The placement of a tagout device—usually a tag—on an energy isolation device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.
Verification	Verification (try-out) of machines, equipment, or processes to assure that energy sources have been isolated.

4.0 PROCEDURE

4.1. Multi-Employer or Contractor Work Sites

Anytime Delta services employees will be performing work tasks requiring Lockout/Tagout at a host clients site or with other contractors the foreman or project manager will discuss with the host employer and other contractors who's lockout/tagout procedures will be followed or assure that the procedures match up and do not create a hazard to any of the involved companies employees.

4.2. Energy Control Procedure

Written Specific Energy Control Procedures shall be followed when provided by the host employer for whom we are performing work for each operation covered under the purpose and scope of this EHSP. LOTO devices shall include name of individual placing device in place. The following steps must be included in the procedure and if not, procedure is provided these steps should be followed for all work covered by this EHSP.

4.2.1. Step 1 — Preparing to Shut Down the Machine, Equipment, Or Process

Examples of Step 1 issues to be addressed follow.

- Identify all sources of energy and potential for stored and residual energy. (electrical, steam, hydraulic, tension, gravity, etc)
- Identify methods that will be used to isolate and lockout these energy sources.
- How will Operations or the client prepare the machine, equipment, or process for shutdown and servicing? Do process lines, pumps, or other equipment need to be drained and flushed to eliminate a chemical exposure?
- How will the affected persons be notified of the impending shut down of the machine, equipment, or process?
- How will the machine, equipment, or process be shut down?
- How will stored and/or residual energy be relieved, cooled, blocked, or isolated?
- How will all sources of energy to the machine, equipment, or process be isolated, locked, and tagged out?
- Identify the proper type and placement for locks, tags, and lockout devices at all points of protection where an energy isolation device is used.

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- Determine if and where temporary blocking or supports will be needed and how to lock them in place.
- Will the individual or group lockout method be used for the lockout and/or tagout?

All of this information shall be placed in a written procedure specific to the operation, and this information will be conveyed to the personnel, who will perform the servicing and/or maintenance of the equipment.

4.2.2. Step 2 — Shutting Down the Machine and/or Equipment

Examples of issues to be addressed and actions to be taken include the following.

- Prior to shutting down the process and/or equipment, verify that the client is aware of and approves of the deactivation of the machine, equipment, or process. Obtain permits.
- Notify all affected employees/persons that the machine, equipment, or process will be shut down and shall not be reactivated until further notice.
- Shut down the machine, equipment, or process in accordance with the written plan.

4.2.3. Step 3 — Isolating the Machine, Equipment, Or Process from The Energy Sources

Examples of issues to be addressed and actions to be taken in this phase are the isolation of all electrical, mechanical, pneumatic, chemical, thermal, or other energy sources by the application of appropriate energy isolation devices, lockout devices, locks, and tags.

4.2.4. Step 4 — Applying the Lockout and Tagout Devices

Examples of issues to be addressed and actions to be taken in this phase follow.

- If using the individual lockout method, verify that all authorized persons place a lock and tag on each energy source.
- If using the group lockout method, the supervisor must place a lock and tag on each energy source, verify that the key for each lock is placed in the group lock box, and that the group lock box is secured by placing their lock and tag on the lock box. Then each individual involved with the locked-out equipment shall apply a lock on the group lock box, including subcontractors.

4.2.5. Step 5 — Safely Releasing All Potentially Hazardous Stored or Residual Energy

After all lockout/tagout devices are applied all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe. Examples of issues to be addressed and actions to be taken in this phase are:

- Placing temporary energy isolating devices or supports, as needed. The energy isolating devices shall be locked in place and clearly identify as to their purpose.
- Safely releasing any stored or residual electrical energy by a qualified electrician.
- Safely releasing any stored or residual hydraulic or pneumatic energy by removing and/or bleeding lines and equipment or utilizing another, equivalent safe method.
- Safely releasing any stored or residual thermal or chemical energy by draining and flushing lines, pumps, or other equipment that may contain chemicals, steam, hot water, etc.
- Safely releasing any mechanical energy by allowing the equipment to cycle, or other safe means.

4.2.6. Step 6 — Verifying (Trying Out) The Isolation of The Machine, Equipment, or Process

Before starting the maintenance or servicing of the machine, equipment, or process, the authorized employee shall verify that isolation and de-energization of the machine or equipment has been accomplished. Examples of issues to be addressed and actions to be taken in this phase follow.

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- A qualified electrician shall test all electrical conductors with an approved meter. The meter shall be tested on a known source, the locked-out equipment is then tested, and afterwards the meter is tested on the known source again.
- Attempt to restart the equipment by pushing the start button, manual controls, etc., to verify that the machine, equipment, or process cannot be inadvertently started during servicing.
- If the machine, equipment, process, or a component thereof does start during the verification phase, stop the process and notify the supervisor. Additional steps shall be taken to identify, isolate, lockout, and tagout the energy source. If necessary, the Specific Energy Control Procedure shall be revised before work resumption.

4.3. Energy Isolation

4.3.1. General Requirements

- No attempt shall be made to operate equipment on which a lockout device has been placed.
- No one shall remove another person's lockout device, except as described in 4.2.5.
- Lockout devices must be inspected before each use to ensure they are working properly.
- Locks for energy source isolation must have a means of identification that distinguishes them from any other locking device on the project. A particular color, shape, or size may be used as the means of identification. Locks should also be numbered.
- Lockout devices shall not be used for any other purpose other than to lockout equipment.
- When a machine, equipment, or process must be isolated and locked out for a long period of time, periodic inspections should be performed to verify that locks and tags are still in place. The frequency of these inspections will vary depending upon the circumstances, e.g., inspect prior to each shift for an active operation or weekly for an inactive operation.

4.3.2. Locks

- Locks used for isolating an energy source, shall not be used for any other purpose.
- Locks used as part of an energy isolation device must be individually keyed. While in use, the key shall remain in the possession of the individual who placed the lock(s) or in the group lock box.
- A Lockout Log (Figure 3) should be used to identify the location of locks while in use.
- Locks must be durable and able to withstand the environment to which they are exposed.
- Locks must be singularly identifiable as being used for Lockout/tagout only. Delta uses a red aluminum lock. Since models change it is not possible to identify a specific model but Delta will always use red or other unique color locks rather than a standard silver "Master" type lock.

4.3.3. Tags

Tags used in conjunction with lockout devices for the purpose of isolating an energy source shall be standardized in such a way as to serve as a prominent warning, e.g., DANGER — DO NOT OPERATE.

The tag must have spaces available for date, identification of energy source, and name of the individual placing the tag.

The construction, markings, and written information on the tag shall be such that deterioration will not occur when exposed to weather and/or corrosive environments.

Tags and tag attachment devices should not be re-used and are to be appropriately disposed after removal.

The means of attachment shall be

- Of a non-reusable type,

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- Attachable by hand,
- Self-locking and non-releasable with a strength to withstand at least 50 pounds of pull, and
- Resistant to weather and corrosive environments.

4.3.4. Removal of Locks and Tags

Only the person who applied the lock and/or tag shall remove that lock and/or tag except as provided in this section.

4.3.5. Abandoned Lock Procedure

In cases where the person who applied the lock and/or tag is not available to remove it, the Site Manager may authorize the supervisor to remove the lock and/or tag only in accordance with the following procedure. This procedure should be used only as a last resort to remove a lockout.

- Step 1 – Verification that the person who applied the lock and/or tag is not present at the facility.
- Step 2 – Make all reasonable efforts to contact the person, who applied the lock and/or tag to inform him/her that the lock and/or tag will be removed.
- Step 3 – The supervisor must verify that the equipment that was locked out is safe to return to service. All personnel involved in the lock out are clear and no damage will occur when the equipment is restarted.
- Step 4 – The supervisor must document how all previous steps have been met. Documentation should be kept on file at the site.

Once this has been done, the lock may be removed, but step five shall also be completed.

- Step 5 – Ensure that the person who applied the lock and/or tag is notified of the removal before he/she resumes work at the facility.

4.2.5 Tasks Involving Multiple Shifts

For tasks requiring lockout and/or tagout, which involve multiple shifts, the supervisor must ensure the continuity of the lockout and/or tagout as follows:

- The off going supervisor will remove his/her lock and tag only after the incoming supervisor has placed his lock and tag on the lock box.
- The incoming supervisor will ensure that the incoming employees verify isolation and place their locks and tags on the lock box.

4.4. Energy Isolation Methods

There are three methods of energy isolation: individual lockout, group lockout, and tagout only.

The method to be used in each situation will depend on

- The complexity of the system,
- The number of persons who will place locks,
- The number of locks to be placed to effectively lock out the machine, equipment, or process, and
- Whether or not the system is designed to accept a lock.

The supervisor shall determine which method is appropriate for each situation and will identify the method in Step 1 of the Specific Energy Control Procedures.

4.4.1. Individual Lockout Method

The individual lockout method is normally used when the number of persons and locks that will be required on energy isolation devices is small.

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When using the individual lockout method, each person involved in the service or repair of the machine, equipment, or process shall:

- Place a lock on each appropriate energy isolation device.
- Place a completed tag on each lock.
- Remove his/her lockout devices and tags after verification that all of his/her
 - Work is completed,
 - Tools and materials are cleared, and
 - Blocks or temporary energy isolation devices have been removed.

4.4.2. Group Lockout Method

The group lockout method is normally used when a larger number of persons or locks will be required to assure isolation of energy sources.

When using the group lockout method, the following procedure shall be used.

- The supervisor of the authorized employees shall place a single lockout device on each energy isolation device.
- The supervisor of the authorized employees places a single completed tag on each lockout device.
- The supervisor places the keys for the single lockout device in the group lockbox or equivalent device.
- Each authorized employee and the supervisor shall affix a lock and tag to the group lockout device, group lockbox, or equivalent device before he/she begins work, and shall remove those devices only when he/she completes work on the machine, equipment, or process being serviced or maintained.
- The supervisor shall ensure that all work of personnel under their supervision is completed, and that their personnel will no longer be affected by the lockout prior to removal of lockout devices and tags.
- The supervisor shall remove his/her lockout devices and tags after verification that all
 - Work is completed,
 - Tools and materials are cleared, and
 - Blocks or temporary energy isolation devices have been removed.

4.4.3. Tagout Only

The tagout-only method shall be used only when energy sources are not capable of being locked out. This should be very rare considering the variety of lock out devices available on the market. If tags are used rather than locks a system must be developed providing all employees full protection equal to the use of lockout.

Use of the tagout-only method requires approval of the Site or EHS Manager.

All other requirements of this work instruction apply.

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 and lockout device.
- 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.

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

4.5. Start-up Procedures

Before lockout and energy isolation devices are removed and energy is restored to the machine, equipment, or process, the following steps shall be taken in order.

4.5.1. Step 1

Verify that machine and equipment components, guards, etc., have been replaced and are intact.

Also, verify that all tools and materials such as screws, wrenches, nuts, bolts, rags, etc., have been removed from the machine, equipment, or process.

4.5.2. Step 2

Verify that the person who applied the devices removes all energy isolation and lockout devices.

4.5.3. Step 3

Verify that all personnel are removed from the machine, equipment, or process and are safely positioned so that start-up will not expose them to hazardous energy sources.

4.5.4. Step 4

Remove temporary blocking and structural supports as set forth in the Specific Energy Control Procedure.

4.5.5. Step 5

Notify all affected employees/persons and the client contact that the machine has been released from lockout and can be operated safely.

4.6. Shop Equipment

4.6.1. Lock out procedures, as provided elsewhere in this section, are not required for portable electric tools if ***all the following conditions are met:***

- The equipment must not produce or use any stored energy, for example a portable air compressor, a steam washer, or a chemical pump.
- The equipment can be and is unplugged and the plug remains under the exclusive control of the operator or it is placed in a lockout device and locked.
- The service on the tool is limited to changing bits, blades, or other such devices. The tool must be properly locked out if any maintenance or servicing is to take place.

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4.7. Troubleshooting, Testing and Positioning of Machines/Equipment

Occasionally it will necessary to troubleshoot, test or position a piece of equipment. If this is necessary it is critical to remember to not take short cuts and adhere to the following Lockout/tagout procedures:

- 4.7.1. Clear the machine or equipment of tools and materials,
- 4.7.2. Remove employees from the machine or equipment area,
- 4.7.3. Remove the lockout or tagout devices,
- 4.7.4. Energize and proceed with testing or positioning,
- 4.7.5. If you must open panels, remove guards or other activities that could expose you to energized conductors you must wear the properly rated arc flash clothing, gloves and face protection,
- 4.7.6. De-energize all systems and reapply energy control measures. **Note: when de-energizing all systems and reapplying Lockout/tagout you must still follow all the above energy control procedures from section 4.1**

4.8. Lockout and Tagout Program Review

Inspections shall be conducted to verify that the company's lockout and tagout program is effective.

A written review of lockout and tagout procedures shall be performed at least annually and/or after any incident involving lockout or tagout, in order to verify that the requirements of the procedure are being followed.

A designated employee, other than the one(s) utilizing the lockout and tagout procedure, shall perform the review.

The program review shall include an evaluation of employees' compliance with the lockout and tagout procedure.

The program review shall document the machine, equipment, or process on which the energy control procedure was being utilized, the date of the review, the employees included in the review, and the name of person performing the review. See Figure 1, Lockout and Tagout Program Review Report.

Safety Evaluation Reports and other written safety audits that include lockout and tagout program review may, in some cases, fulfill the program review requirements.

The EHS Manager shall assure that annual and post-incident reviews have been performed.

4.9. Training

Authorized and affected personnel, who have operational control, must receive training in the contents of this work instruction and the relevant HSE training module prior to work involving lockout and tagout.

The training shall be conducted at least annually thereafter, anytime this work instruction is revised, and when a change in machinery, equipment, or process presents new potential hazards.

Training documentation will be maintained at the site and shall include copies of quizzes and the Lockout and Tagout Training Record, or equivalent. (See Figure 2.)

4.10. Disciplinary Action

Due to the consequences of failure to comply with the directives set forth in this work instruction, disciplinary action, up to and including discharge, should be considered for any person:

- Who operates an energy source isolation device to which lockout devices and tags are attached or removes a lockout device or tag without authorization;
- Who works on an energy source without following this work instruction; or

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- Who deviates from this work instruction.

5.0 REFERENCES AND RELATED DOCUMENTS

29 CFR 1910.147, The Control of Hazardous Energy, Lockout/Tagout

29 CFR 1926.417, Lockout and Tagging of Circuits

6.0 FIGURES

Figure 1: Lockout and Tagout Program Review Report

Figure 2: Lockout and Tagout Training Record

Figure 3: Lockout Log

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Figure 1
Lockout and Tagout Program Review Report

Project Number: _____ Location: _____

Project: _____ Date: _____

INSPECTION

Machine, Equipment, or Process Inspected: _____

Employees Included In Inspection: _____

Inspection Results: _____

Review of Incidents (involving lockout/tagout): _____

Conclusion and Findings: _____

Annual Training Completed and Documented: Yes _____ No _____

Inspector: _____ Signature: _____

Site Manager _____ Signature: _____

Figure 2 Lockout and Tagout Training Record

My signature indicates that I acknowledge that I have received training in the Lockout and Tagout EHSP 15.1 and that I fully understand the requirements of this work instruction. I agree to abide by these requirements. I understand that violation of these requirements may subject me to disciplinary action up to, and including, discharge.

Name Printed	Signature	Social Security No.	Date of Training

Name of instructor: _____

Attach a copy of the training module to this training attendance roster.

Maintain training roster and copy of training module with project records.

