

SUBJECT: Control of Hazardous Energy (Lock-out / Tag-out) Procedure	Effective Date: 4/18/12	Procedure Number: FS 2012 EHS0004
	Supersedes:	Page 1 Of 11
	Responsible Authority: Director of Environmental Health and Safety	

APPLICABILITY/ACCOUNTABILITY:

This procedure applies to all departments, support personnel, and functional units within Facilities and Safety in the University of Central Florida (UCF), involved in servicing or maintaining machines or equipment in which the unexpected energizing, start-up, or release of residual energy could harm employees.

PROCEDURE STATEMENT:

This Procedure provides information to supervisors, superintendents, and employees for the control of hazardous energy while performing work activities and emergency operations. This procedure meets the requirements from the Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.147, The Control of Hazardous Energy (Lock-out/Tag-out).

As stated in the “UCF Design, Construction, and Renovation Standards (09-13-11), Division 1 General Requirements, Section Environmental Health and Safety Construction Information”, contractors are individually responsible for meeting and monitoring their job specific requirements set forth by OSHA.

EXCEPTIONS:

This policy does not apply to work on cord and plug connected electric equipment for which:

- Exposure to the hazards of unexpected energizing, or start-up of the equipment, is controlled by the unplugging of the equipment from the energy source
- The plug is under the exclusive control of the employee performing the servicing or maintenance

This policy does not apply to hot tap operations involving transmission and distribution systems for substances such as gas, steam, water, or petroleum products when they are performed on pressurized pipelines, provided that the UCF demonstrates that:

- Continuity of service is essential
- Shutdown of the system is impractical
- Documented procedures are followed
- Special equipment is used which will provide proven effective protection for employees.

DEFINITIONS:

Affected employee: an employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lock-out or tag-out, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

Authorized employee: a person who locks-out or tags-out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked-out: an energy isolating device which 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 lock-out 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 of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, 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 energy isolating devices.

Energy source: any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap: a procedure used in the repair, maintenance, and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lock-out: the placement of a lock-out 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 lock-out device is removed.

Lock-out device: a device that uses a positive means such as a lock, either key or combination type, 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.

Major Non-Compliance: the occurrence of an unsafe activity or operation not in accordance with the OSHA requirements or the UCF Safety Procedures, and that does pose an immediate life threatening danger to the employee.

Minor Non-Compliance: the occurrence of an unsafe activity or operation not in accordance with the OSHA requirements or the UCF safety procedures, and that does not pose an immediate life threatening danger to the employee.

Servicing and/or maintenance: workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected startup of the equipment or release of hazardous energy.

Setting up: any work performed to prepare a machine or equipment to perform its normal production operation.

Tag-out: the placement of a tag-out 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 tag-out device is removed.

Tag-out 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 the tag-out device is removed.

RESPONSIBILITIES:

I. The Department of Environmental Health and Safety

- Assists the supervisors and superintendents in identifying the need for the use of Lock-out/Tag-out procedures
- Assists the supervisors and superintendents in selecting the types of Lock-out/Tag-out devices
- Offers all necessary training required by this procedure
- Evaluates and updates this procedure as needed

II. Supervisors and Superintendents

- Arrange for payment of all charges and cost associated with the equipment and training
- Ensure that all supervised personnel are properly trained and knowledgeable of the safety procedures for the control of hazardous energy included in this procedure
- Ensure that the supervised personnel have all the necessary equipment to do the job in the safest possible way
- Keep records of all training, specific Lock-out/Tag-out procedures for each machine if needed, and any other document related to this procedure
- Enforce the compliance of supervised personnel regarding this procedure

III. Employees

- Follow safe practices at all times
- Attend all required training and refreshers
- Inform the supervisor or superintendent if they do not understand the information given in the training, or if there is any other safety concern before applying any Lock-out/Tag-out procedure (Only trained personnel can apply Lock-out/Tag-out procedures.)
- Inspect and maintain the Lock-out/Tag-out and safety equipment before using it
- Inform the supervisor or superintendent about any defects or damage in the Lock-out/Tag-out equipment, or any of its components

PROCEDURES:

Each department, unit, or division shall establish a program consisting of specific energy control procedures, employee training, and periodic inspections for each energized device. This is to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start-up or release of stored energy could occur, the machine or equipment is isolated from the energy source.

I. Training

The employees must be trained before applying any Lock-out/Tag-out procedure. Training will be requested and coordinated by the supervisors or superintendents. It will be offered by the Department of Environmental Health and Safety.

Training shall include the following topics:

- Purpose and use of energy control procedures
- Recognition of hazardous energy sources
- Type and magnitude of the energy available in the workplace
- Methods and means necessary for energy isolation and control
- Limitations of tags

Re-training is necessary any time:

- There is a change in the job assignments
- There is a change in machines, equipment or processes that present a new hazard
- There is a change in the energy control procedures
- Employees demonstrate inadequacies in knowledge or safety procedures
- There is any other situation that might warrant re-training

Management personnel of each department, unit, or division shall instruct each affected employee about the purpose and use of this Lock-out/Tag-out Procedure.

II. Lock-out / Tag-out

If an energy isolating device is capable of being locked-out, the energy control procedures shall use lock-out and tag-out. If an energy isolating device is not capable of being locked-out, the energy control program shall use a tag-out. Procedures for the control of potentially hazardous energy shall be developed, documented, and used when employees are engaged in the activities covered by this procedure.

The specific procedures developed by each department, unit, or division shall clearly outline the scope, purpose, authorization, rules, and techniques to be used for the control of hazardous energy, including, but not limited to, the following:

- A specific statement of the intended use of the procedure
- Specific steps for shutting down, isolating, blocking, and securing machines or equipment to control the hazardous energy
- Specific steps for the placement, removal, and transfer of Lock-out/Tag-out devices
- Specific requirements for testing a machine or equipment to determine and verify the effectiveness of Lock-out/Tag-out devices, and other energy control measures

Lock-out/Tag-out devices shall be singularly identified, shall be the only devices used for controlling energy, and shall not be used for other purposes. They shall also be durable, standardized, substantial, and identifiable.

III. Exception

The departments, divisions, and units do not need to document the required procedure for a particular machine or equipment when all of the following elements exist:

- The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shutdown which could endanger employees
- The machine or equipment has a single energy source which can be readily identified and isolated
- The isolation and locking-out of that energy source will completely de-energize and deactivate the machine or equipment
- The machine or equipment is isolated from that energy source and locked-out during servicing or maintenance
- A single lock-out device will achieve a locked-out condition
- The lock-out device is under the exclusive control of the authorized employee performing the servicing or maintenance
- The servicing or maintenance does not create hazards for other employees
- The department, unit, or division, in using this exception, has had no accidents involving the unexpected activation or re-energizing of the machine or equipment during servicing or maintenance

IV. Sequence of Lock-out / Tag-out Procedures

Follow these steps for a proper Lock-out/Tag-out process:

- De-energizing the equipment: (It will not be considered locked-out or tagged-out until all the following steps are completed.)
 1. Notify all affected employees that a Lock-out/Tag-out system is going to be used and the reason for using Lock-out/Tag-out
 2. Shut the energized equipment down by the normal stopping procedure if the machine or equipment is operating
 3. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s)
 4. Dissipate or release any stored or residual energy (such as that in springs, elevated machine parts, rotating flywheels or fan blades, hydraulic systems, and gas, air, steam or water pressure, etc.) using methods such as repositioning, blocking, bleeding down, venting, etc.
 5. Continue monitoring the energy isolation if there is a possibility of re-accumulation of stored energy to a hazardous level and continue until the possibility of such accumulation no longer exists
 6. Lock-out and Tag-out the energy using your assigned individual lock(s) and tag(s)
 7. After ensuring that no personnel are exposed, the following actions shall be taken:
 - Operate the equipment/process control(s) (push buttons, switches, etc.) to verify that energy isolation has been accomplished (Make sure to return operation control(s) to "neutral" or "off" position after the test.)
 - Check the equipment/process by the use of test instruments and/or visual inspection to verify that energy isolation has been accomplished
- Preparation for the removal of the Lock-out/Tag-out devices
 1. Remove all tools, debris, and other items from the equipment/process
 2. Ensure that all personnel are safely positioned
 3. Replace all safety guards if applicable
 4. Inform all affected personnel that the Lock-out/Tag-out devices will be removed
- Removal of the Lock-out/Tag-out devices

Each Lock-out/Tag-out device shall be removed from the energy isolating device by the employee who applied the device. When the authorized employee who applied

the Lock-out/Tag-out device is not available to remove it, that device shall only be removed by that employee's supervisor, provided that specific procedures for such removal have been developed.

If the authorized employee is not available, the supervisor or superintendent will follow the next steps before removing any Lock-out/Tag-out device:

1. Ensure that the authorized employee who applied the device is not at the facility
2. Make all reasonable efforts to contact the authorized employee to inform him or her that the Lock-out/Tag-out device has been removed
3. Ensure that the authorized employee is informed that the Lock-out/Tag-out devices were removed before resuming work next day, if he or she was not notified before

V. Additional Requirements

- Lock-out / Tag-out interruption

In situations in which Lock-out/Tag-out devices must be temporarily removed to test or position the machine, equipment or component, the following sequence of actions shall be followed:

1. Clear the machine or equipment of tools and materials
2. Remove the authorized employees from the machine or equipment
3. Inform the affected employees about the temporary removal of the Lock-out/Tag-out interruption
4. Remove the Lock-out/Tag-out
5. Energize and proceed with testing or positioning
6. De-energize all systems and re-apply the energy control measures as previously established

- Group Lock-out/Tag-out

When service or maintenance is performed by a crew or a group of persons, they shall utilize a written procedure which gives them a level of protection equivalent to that provided by the implementation of a personal Lock-out/Tag-out device.

Group Lock-out/Tag-out devices shall be used in accordance with this procedure and with the following specific requirements:

1. When more than one crew or department is involved, assignment of overall job-associated Lock-out/Tag-out control responsibility shall be assigned to an authorized employee (Principal Authorized Employee) designated to coordinate affected work forces and ensure continuity of protection
 2. Provision shall be made for the Principal Authorized Employee to ascertain the exposure status of individual group members with regard to the Lock-out/Tag-out of the equipment/process
 3. Each authorized employee shall affix a personal Lock-out/Tag-out device to the group Lock-out/Tag-out device, group lockbox, or comparable mechanism when they begin work, and shall remove those devices when they stop working on the equipment/process being serviced or maintained
- Shift or personnel changes

Specific procedures shall be implemented, documented, and used during shift or personnel changes to ensure the continuity of Lock-out/Tag-out protection. They should include provisions for the orderly transfer of Lock-out/Tag-out device protection between off-going and in-coming employees to minimize exposure to hazards from the unexpected energizing or start-up of the equipment/process, or the release of stored energy.

VI. Procedure Evaluation and Review

This procedure should be evaluated and updated annually by the Department of Environmental Health and Safety to meet any changes in the OSHA regulation. Comments from the supervisors, superintendents and employees are vital for the review and evaluation of this procedure.

The employees, supervisors, or superintendents can request from the Environmental Health and Safety Department a Job Safety Analysis for the use of energy control devices. An Environmental Health & Safety representative will evaluate the work activities and will recommend changing the lock-out / tag-out procedures if needed.

ENFORCEMENT:

The Department of Environmental Health and Safety will perform periodic inspections to determine compliance with this procedure. The following section describes the actions to be taken after a Minor Non-Compliance or a Major Non-Compliance.

I. Minor Non-Compliance

If a Minor Non-Compliance is noted, the Department of Environmental Health and Safety (EH&S) shall:

- Send an electronic notification to the supervisor or superintendent within five (5) calendar days with the non-compliance findings and with a request for corrective actions
- Conduct a follow-up inspection within 14 calendar days to ensure corrective actions were implemented
- Send an electronic notification to the Director of the Department requesting a correction plan if the unsafe situation was not corrected after the follow-up inspection
- Conduct a second follow-up inspection within seven (7) calendar days to ensure corrective actions were implemented, if necessary
- Send an electronic notification to the Vice President of the Department requesting a correction plan if the unsafe situation was not corrected after the second follow-up inspection
- Conduct a third follow-up inspection within seven (7) calendar days to ensure corrective actions were implemented, if necessary
- Refer the case to the Provost or the Safety Council for further actions if the unsafe situation has not been corrected after the third follow-up inspection

After receiving the notification from EH&S, the supervisor or superintendent (and the Director of the Department, and the Vice President, if necessary) shall:

- Ensure that all corrective actions recommended by EH&S are implemented
- Coordinate with EH&S to provide re-training on the Safety Procedures, if necessary
- Recommend disciplinary actions for the responsible personnel if the Minor Non-Compliance Safety Violation has not been corrected after the third notification
- Coordinate payment to EH&S of \$50 for the second follow-up inspection and \$100 for the third follow-up inspection, if necessary

II. Major Non-Compliance

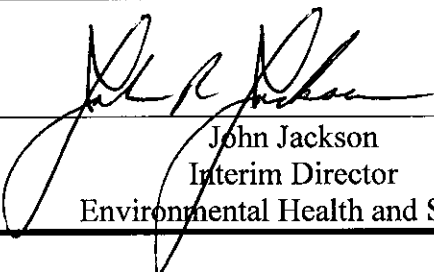
If a Major Non-Compliance is found, the Department of Environmental Health and Safety (EH&S) shall:

- Order or direct the employees to stop immediately the unsafe operation and speak with the supervisor or superintendent
- Send an electronic notification the day of the occurrence to the Director of the Department with a copy to the supervisor or superintendent with the non-compliance findings and with a request for immediate corrective actions
- Conduct a follow-up inspection the next day or before the operation is resumed, to verify corrective actions were implemented
- Send an electronic notification to the Vice President of the Department if the unsafe situation was not corrected after the second follow-up inspection

- Refer the case to the Provost or the Safety Council for further actions

After receiving the notification from the Department of Environmental Health and Safety (EH&S), the supervisor or superintendent (and the Director of the Department, and the Vice President, if necessary) shall:

- Ensure that all corrective actions recommended by EH&S are implemented
- Coordinate with EH&S to provide re-training on the Safety Procedures before sending the employee back to the worksite or procedure that was found in non-compliance
- Recommend disciplinary actions, and possibly job termination for the employee if the Major Non-Compliance has not been corrected after the second notification

Approved By:	Date Approved:
 John Jackson Interim Director Environmental Health and Safety	4/18/12