



Environmental Health & Safety Policy Manual		
Issue Date: 09/14/2009	Updated: 3/27/2024	Policy # EHS-400.05
Hazardous Energy Control Policy		

1.0 PURPOSE:

This policy is designed to protect faculty, staff, students, visitors, and contractors from injury by unexpected energizing, startup, or release of hazardous energy when equipment, machines, or processes are maintained or serviced.

2.0 SCOPE:

This document and its appendices apply to all LSUHSC employees and contractors who maintain, repair, clean, service, or adjust energized machines and/or equipment.

The guidance in this policy applies to lockout only. In rare instances where lockout is not possible and tagout must be used, the supervisor must gain approval from the EH&S Executive Director and Facility Services Director, who will review and approve specific tagout procedures before work commences.

3.0 RESPONSIBILITIES:

3.1 Environmental Health and Safety (EH&S) Department shall:

- Routinely evaluate lock-out/tag-out (LOTO) operations to ensure work does not pose a hazard to LSUHSC personnel, students and guests, or operations.
- Inspect and evaluate the energy control program, to include procedures and practices, at least annually to ensure that proper LOTO procedures are being followed. These inspections will include a review between EH&S and each authorized LSUHSC employee directly utilizing the LOTO system.
- Assist the Facility Services department supervisors with the development and review of new LOTO procedures.
- Routinely evaluate LOTO operations for proper use and maintenance of associated equipment.
- Be the single point of issue for “DANGER: Do Not Operate LOCKOUT/TAGOUT” tags.
- Provide training as required by this policy.
- Review contractor LOTO programs and operations to assess compliance with this policy and OSHA regulations.

3.2 Facility Services Department (FS) Supervisors shall:

- Maintain a list of equipment, machinery, and operations that require the use of LOTO procedures. The file will include the location, description, power source, and primary hazards of equipment/machinery, a list of the primary operators/maintenance personnel, and a list of LOTO equipment that is used and maintained on site. A current copy of the list shall be provided to EH&S.
- Develop equipment/machine specific written LOTO procedures for all hazardous energy sources, as outlined in this procedure.
- Provide and maintain a current list of authorized employees to EH&S.
- Ensure that affected and authorized employees are trained in accordance with the requirements of this procedure. Ensure that all applicable new employees receive training within 30 calendar days of hire date.
- Perform inspections to certify that LOTO equipment is available for use and is in good working condition.
- Ensure functional areas and LOTO operations comply with the requirements directed by this policy.
- Maintain all records required as part of this policy current and available for review.
- Adhere to pre-purchase/use requirements as outlined in this policy.
- Document and notify EH&S of new system(s) that require the development of LOTO procedures.
- Document and notify EH&S of any existing system(s) that has been modified and requires revision of established LOTO procedures.

3.3 Employees shall:

- Comply with the policies and requirements directed by this document.
- Not attempt to start, energize, or otherwise use machines or equipment with attached LOTO devices and/or machine guards/hazard protections removed.

3.4 Construction and Planning shall:

- Adhere to pre-purchase/use requirements as outlined in this policy.
- Submit contractor's LOTO program and plans to EH&S for review.
- Maintain all records required as part of this policy current and available for review.
- Make appropriate notification to affected LSUHSC employees prior to the commencement of work.
- Notify affected LSUHSC employees upon completion of the LOTO operation.

4.0 IMPLEMENTATION:

This LOTO Policy applies to routine and emergency operations, including:

- maintenance and servicing of equipment, machines, and processes. Activities that include adjusting, constructing, inspecting, installing, maintaining, modifying, servicing, or setting up equipment, machines or processes must incorporate the use of LOTO.
- activities which involve cleaning and lubricating of or removing jams from equipment, machines or processes, or those modifications that require adjustments or tool changes where there is a potential risk to the employee of accidental or unexpected startup or energization of equipment necessitate the use of LOTO.
- computer controlled apparatus that might initiate startup or energization of equipment, machinery or processes must also be controlled by LOTO if maintenance or service of that equipment, machine or process is required.
- This policy does not apply to:
 - minor tool changes, adjustments and servicing activities that are considered part of the normal production operations, provided the work method used incorporates measures that will provide effective means of personal protection.
 - disconnection of cord from a power supply, provided that the cord / plug connection can be seen by the repair or service person during work activities. If the repair or service person must leave the work area while the equipment, machine or process is not operating according to manufacturer's specifications, then the equipment, machine or process must be locked or tagged out to prevent accidental injury or fatality to a potential user.
 - the use of a stop button or switch which will not allow accidental activation when performing minor tool changes or adjustments of small, portable equipment.
 - hot tap operations involving the transmission and distribution of materials and substances such as air, electricity, gas, steam, or water, if performed on pressurized pipes, if it can be demonstrated that:
 - continuity of the energy service is essential.
 - shut down of the system is impractical.
 - procedures are to be followed that will adequately protect the health and safety of the personnel performing the work.
 - out-of-service or discontinuance of service notifications.

4.1 General Requirements:

- Systems containing hazardous energy sources shall be de-energized by LOTO prior to any work being performed on electrical conductors, pressurized systems, or any moving equipment such as pumps, motor generator sets, engines, compressors, cranes, and elevators. An exception to this requirement are systems energized for testing or troubleshooting, or for energized

electrical work specifically approved by the EH&S Executive Director and FS Director.

- Systems containing hazardous energy sources shall be de-energized by LOTO prior to the removal or disabling of guards or interlocks and performance of maintenance, repair or any other activity potentially putting personnel at risk.
- Affected employees shall be notified prior to commencement of LOTO operations and remain clear of LOTO equipment, machinery, and processes always; not attempt to operate equipment, machinery, and processes under LOTO; and shall never tamper with the applied LOTO devices.
- All documentation associated with the performance of LOTO operations shall be maintained with department coordinating the operation and available for review by EH&S to facilitate program review requirements.
- LOTO operations shall be completed in accordance with the General LOTO procedure (Appendix A).
- Equipment/machine specific written LOTO procedures shall be developed to augment the general procedure elements and clearly and specifically outline the scope and methods for completing LOTO operations for each individual equipment/machine.
 - The equipment/machine specific LOTO procedures shall be documented on a Lockout Tagout Procedure Card (Appendix B).
 - Procedure cards shall be attached directly to the associated equipment/machine. Copies of the procedure cards will be maintained by EH&S and accessible for duplication, as necessary, by FS supervisors.
 - When a LOTO equipment specific procedure is not available, one shall be completed by an authorized LOTO individual, and reviewed and approved by EH&S and FS supervision.
- No employee shall perform LOTO without the use of the Lockout Tagout Procedure Card.
- In rare situations, an authorized employee may find an energy device that is incapable of being locked out. The authorized employee, in coordination with the assistance of supervision, shall make every effort to add the necessary apparatus to lock the energy device. Tagout alone shall not be permitted if the system has the capability of being locked out. The use of tagout alone shall only be permitted upon the development of work/site specific tagout procedures for which the supervisor has gained approval from the EH&S Executive Director and FS Director. Tagout procedures shall be written to incorporate all tagout provisions identified with the 29 CFR 1910.147.
- If tagout alone is used for control, the procedure shall be demonstrated to be at least as protective as the use of lockout measures.
- “DANGER: Do Not Operate LOCKOUT/TAGOUT” tags shall clearly advise personnel that operation, movement, or energizing equipment/machinery systems is prohibited. Tags shall be attached with a self-locking tie wrap

device, with a minimum breaking strength of 50 pounds. When tags are used alone, they shall be clearly visible on the component controlling the energy source and located in the same position as a lock would be located.

- Lock out is not required if all sources of energy can be removed by unplugging a single power source and the plug is under the exclusive and constant control of the authorized person.

4.2 Equipment

- All locks, tags, and other necessary equipment (e.g., test equipment such as meter, test lamp, pressure gauge, wall switch lockout devices, valve covers, plug locks, chain lengths, appropriate signs, etc.), for performing LOTO will be supplied by LSUHSC. Each shop within FS shall have a unique color-coded lock. The locks will be assigned by color and shop.
- All authorized employees shall have two locks and tags assigned to them. The authorized employees shall have self-stick labels attached to their locks. These labels shall contain the authorized employee's name for identification purposes.
- Tags shall be attached to the lock and the authorized employee shall identify themselves and what device is being locked out.
- Each authorized employee will also have his own hasp, which also can be used in group LOTO.
- Sharing assigned locks and tags is strictly forbidden.
- Locks and tags cannot be used for purposes other than LOTO and must be standardized in color, shape, or size. Only one key per lock is allowed, except that a spare key will be allowed for device removal and shall be kept in a secured location and under the control of an FS supervisor designated by the FS Director.

4.3 Pre-purchase/use Analysis

- New equipment/systems shall be evaluated prior to purchase to ensure that a lock device can be applied. No equipment/systems shall be procured unless capable of being locked out.
- New equipment/systems shall be evaluated to ensure that machine specific written LOTO procedures are developed and documented prior to activation.
- Prior to the replacement, major repair, renovation, or modification of equipment or machinery, energy isolation devices shall be designed to accept Lockout Devices.

4.4 Contractors

Contractors must comply with OSHA 1910.147, The Control of Hazardous Energy (LOTO), procedures. LOTO is also referenced in the LSUHSC Contractor Safety Guidebook. Prior to any maintenance, repair, cleaning,

servicing, or adjusting of any energized machines and/or equipment on LSUHSC property, the contractor shall:

- Present a LOTO program to the LSUHSC Construction and Planning Department for review, who will submit the plan to EH&S for assessment.
- Prior to commencement of work, the contractor shall make appropriate notification to the affected LSUHSC employees via the Construction Coordinator(s).
- Notify the Construction Coordinator(s) upon completion of the LOTO operation.
- The Construction Coordinator(s) shall notify all affected employees that the LOTO operation is complete.

5.0 TRAINING AND EDUCATION:

5.1 Initial Training

- All authorized and affected employees shall receive initial training through CATS.
- Affected employees will not be allowed to perform maintenance, services or other operations that require LOTO until they have been trained to an authorized employee level.
- All new authorized and affected employees shall be trained within 30 days of hire and prior to using LOTO equipment.
- New employees shall be updated on the LOTO employee list.

5.2 Refresher Training

Refresher training will be provided to all affected and authorized employees annually. Retraining of employee(s) will also occur when:

- there is a change with an affected or authorized job assignment,
- there is a change in machine, equipment or process that presents a new hazard,
- there is a change in the LOTO procedure,
- there is reason to believe that there are deviations from or inadequacies in the employee's knowledge of the procedures.

5.3 Training Elements

Training will consist of:

- knowledge to recognize hazardous energy sources, the type and magnitude of energy sources at LSUHSC,
- methods and means for energy isolation control,
- the contents and requirements of the general and representative equipment specific procedures to include when and how to use the procedures,
- prohibitions identified by the written program and procedures.



6.0 RECORDKEEPING:

EH&S will use the LOTO Inspection Form (Appendix C) to document that:

- LOTO Policy and Procedures are being maintained and updated,
- LOTO equipment is available for use and in good working condition,
- LOTO equipment installed on de-energized equipment is being properly used and maintained,
- All affected and authorized personnel have been trained.

Completion of initial LOTO training and annual refresher training will be documented via CATS. An inventory of all trained personnel and, as applicable for authorized employees, a record of the assigned LOTO equipment shall be maintained by the FS department.

Appendix B will be used to develop LOTO procedures for new or modified machines or equipment and posted on all machines or equipment that requires LOTO. These cards will be re-inspected at least annually.

EH&S shall be provided and maintain a copy of all records for a minimum the current year plus previous three fiscal years.

7.0 INSPECTIONS AND PROGRAM REVIEW:

EH&S shall routinely inspect LOTO operations to evaluate use of and compliance with this policy and the general and equipment specific procedures and to ensure the proper use and maintenance of associated equipment. Inspections shall occur on a basis no less frequent than once every six months, as possible, based on the frequency of performance of LOTO operations.

EH&S will additionally complete an annual audit of all training, equipment, energy source evaluations, and devices and procedures relative to LOTO energy control. A review of authorized employees' understanding of the LOTO procedures will primarily be completed during annual refresher training and be measured primarily through a written test. Employee understanding of the LOTO program requirements and procedures will also be evaluated randomly throughout the year. If at any time there is reason to believe that an employee's knowledge is inadequate, designation as an authorized employee will be removed and refresher training required.

Audit and inspection documentation will be maintained by EH&S.

8.0 REFERENCES:

OSHA 29 CFR 1910.147 Control of Hazardous Energy



OSHA 29 CFR 1926.417 Locking and Tagging of Circuits

9.0 DEFINITIONS:

Affected employee - an employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/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 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 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 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, 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.

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 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.

Normal production operations - the utilization of a machine or equipment to perform its intended production function.

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 adjusting or tool changes, where the employee may be exposed to the unexpected energization or 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.

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 the tagout device is removed.

10.0 APPENDICES:

Appendix A, LOTO Procedures

- Enclosure 1 – LOTO Flow Chart
- Enclosure 2 – Method of Isolating or Blocking Energy
- Enclosure 3 – LOTO Restoring Machine or Equipment to Service

Appendix B, LOTO Procedure Card Form

Appendix C, LOTO Inspection Form

LSUHSC Lockout Tagout Procedures

The guidance in this procedure applies to lockout only. In rare instances where lockout is not possible and tagout must be used, the supervisor must gain approval from the EH&S Executive Director and Facility Services Director, who will review and approve specific tagout procedures before work commences.

Enclosure 1, LOTO Flow Chart, is a guide that describes the steps to take to LOTO machines or equipment.

Enclosure 2, Method of Isolating or Blocking Energy, describes the different types of energy sources and the devices needed to properly LOTO the machine or equipment.

Enclosure 3, Restoring Machine or Equipment to Service, describes the steps that must be taken to verify LOTO completion, LOTO removal, and restarting the machine or equipment to normal operation.

Isolating Energy Sources: Shutdown (see Enclosures 1 and 2)

Authorized employees assigned a task that requires LOTO during routine or **emergency** operations must follow this procedure:

1. The employee applying LOTO must have received training as an authorized employee and follow the machine specific procedure(s).
2. The supervisor must notify the authorized and affected employees that LOTO operations will be commencing on the machine or equipment. Ensure all personnel are familiar with the work site. Conduct a dry run walk through, as necessary.
Notification can be verbal, by use of sign, barricade, etc.
3. The authorized employee shall refer to the machinery or equipment specific procedure to identify the type and magnitude of the energy utilized by the machine or equipment, shall understand the hazards of the energy, and shall know the methods to control the energy.
4. Shut down the machine or equipment using normal stopping procedure (e.g., activate the stop button). Note that shutting a machine off will not automatically de-energize the entire machine; additional actions are required to block or drain energy sources.
5. Isolate all energy sources by closing, blanking, and blinding, or otherwise turning switches/disconnects to the "OFF" or "CLOSED" position. Refer to the equipment specific procedure attached to each machine and piece of equipment to identify and locate all energy sources and their associated disconnects.

If a machine or equipment specific procedure does not exist, notify EH&S that a machine or equipment specific procedure is missing and/or one needs to be developed.

6. Apply appropriate (color coded) locks and tags to the energy disconnects for each energy source present.
7. Block or dissipate all stored energy in rams, flywheels, springs, pneumatics, or hydraulic systems, etc. Note that switch(es), valve(s), or other energy isolating device(s) must be closed so that all energy source(s) (electrical, mechanical, hydraulic, etc.) are disconnected or isolated from the equipment. Stored energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems (e.g., air, gas, steam, or water pressure, etc.), must also be dissipated or restrained by methods such as grounding, re-positioning, locking, blocking, draining or other methods that will effectively secure the release of the energy.
8. The presence of a LOTO device/tag on a system or component does not in itself guarantee that the equipment is de-energized but indicates only that the LOTO tagged disconnect is not to be operated or reconnected to the energy source.
9. Before performing any work, on systems or equipment, employees shall use an appropriate test instrument/procedure to ensure it is de-energized. After assuring no personnel are exposed, attempt activation of all normal operating controls (e.g., push control buttons) to make certain the locked-out machine or equipment does not operate. Return all controls to the "NEUTRAL" or "OFF" position after testing.
Note: Where electrical equipment/circuits must be exposed to test for energization, Personnel shall ensure the appropriate Arc Flash PPE is worn before testing is attempted.
10. The machine or equipment is now locked out.

Restoring Energy Sources: Start Up (see Enclosure 3)

1. When the assigned repair or servicing task is completed and the machine(s) or equipment is ready for testing or return to service, inspect the equipment/machine to ensure that nonessential items have been removed, e.g., tools, maintenance items, ect.
2. Notify all affected employees to ensure that no one will be exposed to danger when the machine or equipment is started up.
3. Replace all guards and reactivate all interlocks to ensure that the locked/tagged machinery components and equipment are operationally intact.

4. Verify that the controls on the machinery or equipment are neutral. If testing the machinery or equipment, as possible, leave the locks and tags in place until testing is completed.
5. When the area is clear and/or testing is complete, remove your locks/tags and de-open all the energy isolating devices to restore energy to the machinery or equipment. Only the authorized employee who installed the energy isolating device, lock and tag, is permitted to de-activate and remove them (see “Absent Employee Lock Removal” and “Group Lockout Tagout” deviations to this requirement).
6. Perform any necessary testing of the restored machinery or equipment to ensure it is in operable condition.
7. Notify the management that the work is completed, and the area has been returned to operational condition.

Absent Employee Device Removal

No employee shall affix or remove the LOTO device of another employee. On rare occasions, when the lock and tag must be removed and the employee who installed the lock and tag is not on campus, every effort must be made to contact that employee. If no contact can be made, then the lock and tag can only be removed by the Supervisor with approval from the Facility Services Director. The employee must be informed upon return to work that their lock and tag was removed.

Shift or Personnel Changes of Lockouts

Some repair and servicing tasks require more than a single shift to complete. To ensure continuity of LOTO protection between off-going and oncoming authorized employees, the following must occur:

- The relieving oncoming authorized worker must install his/her lock to the lockout device before the original lock is removed.
- The designated supervisor must ensure that the transfer task is complete prior to the off-going employee leaving LSUHSC and before the oncoming employee begins work.
- After verification is completed by the designated supervisor, the task may be transferred to the new worker.
- Every time a LOTO site is left unattended, with a planned return during the same shift, the returning crew shall inspect the equipment being serviced to ensure it is still de-energized prior to performing any work on the equipment.

Group Lockout/ Tagout

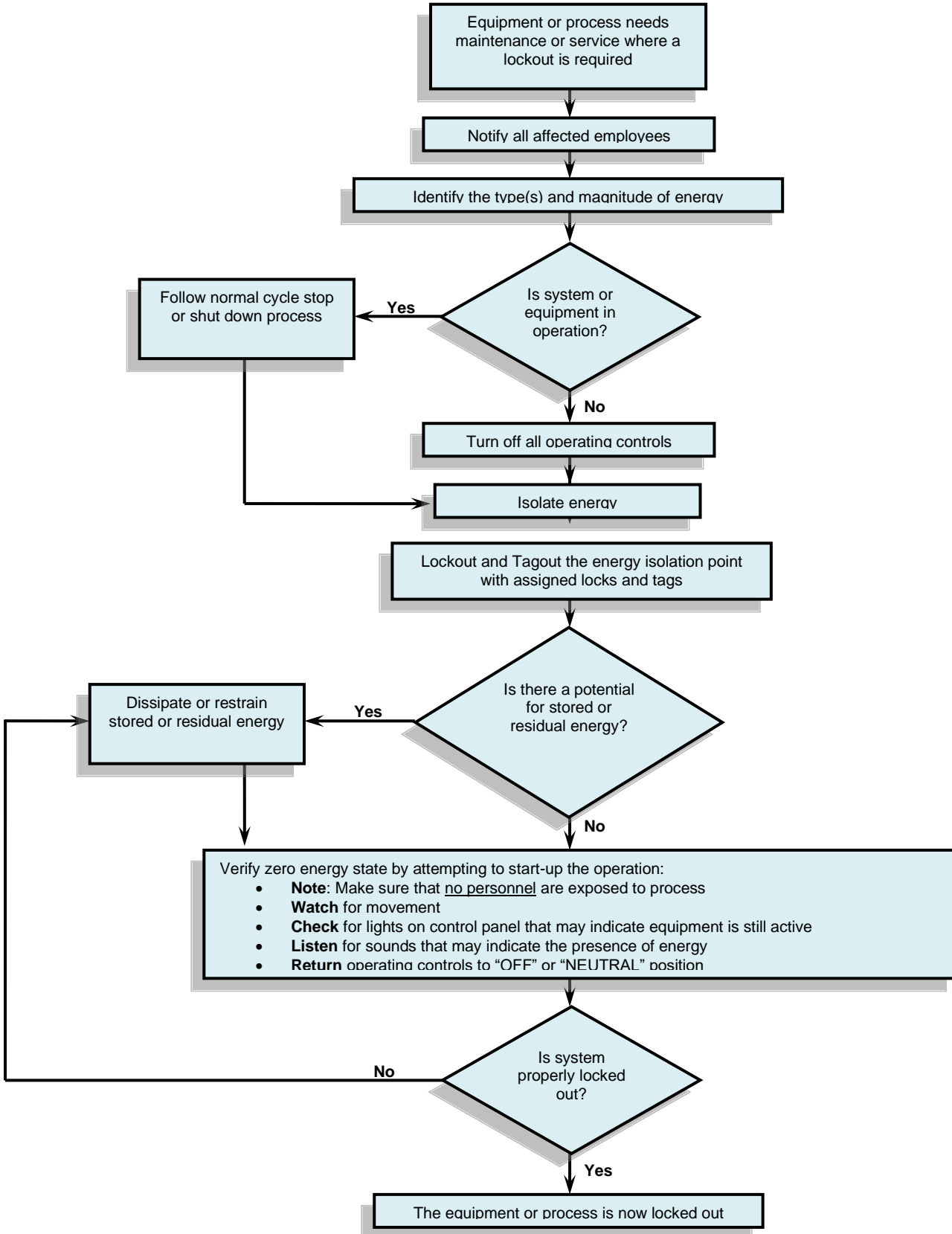
When servicing and/or maintenance are performed by a group of LSUHSC authorized employees, they shall utilize group LOTO, and the following steps shall occur:

- Follow the LOTO general and equipment specific procedures.
- Delegate a supervisor to coordinate a group LOTO. The delegated supervisor's LOTO device will be the first and last LOTO device removed from the group device.
- Each authorized employee shall affix their personnel LOTO device to the group device when he/she begins work and shall remove the device when his/her job is finalized.
- If the equipment/system is not physically capable of accepting multiple locks, a single lock may be used, with the key secured in a lockout box or cabinet where the locks of multiple authorized employees affix their own locks and tags. In this case, LOTO Tags for each crew shall be affixed to the equipment/system being locked out, as well as to the box or cabinet securing the LOTO key for the main LOTO lock.
- When all work is complete and the last lock/tag is remaining, the delegated supervisor may remove his lock/tag and follow the LOTO procedures for Restoring Energy Sources Start-up.

Lockout Removal for Testing, Adjustment, or Alignment

- When a Lockout device must be removed to re-energize an equipment/system for testing, alignment, adjustment, etc., the authorized employee removing the LOTO Device shall remain at the location of the lockout for the entire time the lockout is interrupted. The integrity of the LOTO system shall be maintained. If the Lockout is not in the immediate location of the equipment/system being serviced, communication shall be maintained between the technicians and the authorized employee at the LOTO device location.
- Equipment, tools, and personnel shall be cleared from the immediate vicinity of the equipment/system to be energized.
- An authorized employee shall remove the LOTO and remain at the LOTO location while equipment/system is temporarily energized.
- The authorized employee shall notify the affected personnel of the intent to re-energize the system, and then shall re-energize the equipment/system.
- Upon completion of tasks to the energized equipment/system, the authorized employee shall de-energize the equipment/system and reapply full LOTO control measures to enable continued service to the equipment/system.

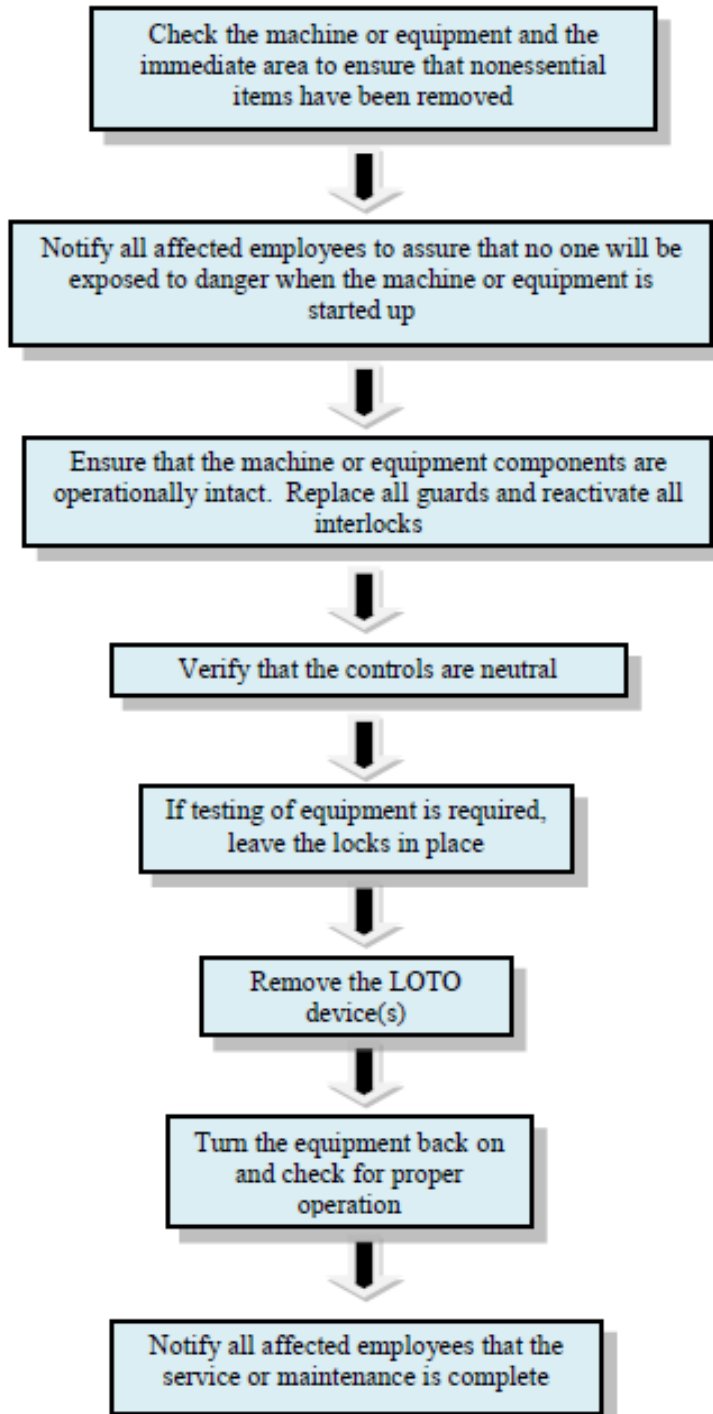
**Appendix A – Enclosure 1
Lockout/Tagout Flowchart**



Method of Isolating or Blocking Energy

Method of Isolating or Blocking Energy	Method of Securing Point of Control (LOTO)	Remarks	Method of Isolating or Blocking Energy	Method of Securing Point of Control (LOTO)	Remarks	Method of Isolating or Blocking Energy	Method of Securing Point of Control (LOTO)	Remarks
Type of Energy: Mechanical – Rotational/Linear			Type of Energy: Electrical			Type of Energy: Potential (Pressure)		
1) Remove segments of operating mechanical linkages such as dismantling push rods and removing belts or flywheels.	a) Secure with padlock or a universal valve lockout and padlock. Place linkages in a locked cabinet away from the machine.		1) Place Main electrical disconnect switch in OFF position.	a) Secure with padlock or a bar and padlock.		Close valves and maintain open vent to relieve pressure.	a) Secure with universal valve lock and padlock.	Energy could be dissipated through lowering to a point where gravity could no longer cause inadvertent falling.
	b) Attach warning tags where the linkages were removed and restrict access to trained personnel.			b) Attach a warning tag and restrict access into the area to trained personnel.			b) Attach warning tags and restrict access to trained personnel.	
						Types of Energy: Potential (Gravity)		
2) Use blocking devices such as wood or metal blocks.	a) Chain and secure by padlock lock at the point of control.		2) Remove segments of electrical circuit, such as printed circuit modules.	a) Tag the module and place in a locked cabinet. Padlock and tag the control center door.		Block in place by using metal or wood blocks under the mechanism or pin the linkages in a position where gravity will not cause the mechanism to inadvertently fall.	a) Secure with block, pin, or universal valve lock and padlock.	
	b) Attach warning tags on the blocking devices and restrict access into the area to trained personnel.			b) Attach a warning tag at the module location and restrict access to trained personnel.			b) Attach warning tags to blocks, linkages, and pins and restrict personnel.	
			Types of Energy: Thermal (Steam)			Types of Energy: Potential (Springs)		
3) Remove power or energy from the driving mechanism such as main disconnect electrical source.	a) (1) Padlock in the OFF position. (2) Disconnect pneumatic and hydraulic lines and tagout.	Check for alternate sources of power. Check for residual pneumatic and hydraulic energy.	Close valves and maintain an open bleed.	a) Secure with chain, universal valve lock and padlock.	Allow time for residual heat to dissipate.	Block in a safe position by pinning or clamping the device, eliminating the potential of unrestricted and undesired travel.	a) Secure with pin, clamp, or universal valve lock and padlock.	Spring energy could be dissipated by release or by dismantling the mechanisms.
	b) Attach warning tags at control points; restrict to trained personnel.			b) Attach warning tags to the valves and restrict access to area to trained personnel.			b) Attach warning tags to the pins and clamps and restrict release or access to trained personnel.	

LOTO Restoring Machine or Equipment to Service



Developed by	Reviewed by	Revised by
ESC	ESC	

Description:			Equipment #: N/A	
Bldg:	Area:	Rev#: 0	Date: N/A	Origin Date: 8/3/2007

6  **LOCKS & TAGS NEEDED**

NEXT AUDIT DUE
AUG 2008

NEXT AUDIT DUE
AUG 2009

NEXT AUDIT DUE
AUG 2010

NEXT AUDIT DUE
AUG 2011







Side View

Side View

 E-1

 CP-1

ALWAYS PERFORM A MACHINE STOP BEFORE LOCKING OUT DISCONNECTS

ID	Source	Device	Location	Method	Check
 E-1	Electrical 480V	Padlock	Isolation point on South side of .	Move E-1 disconnect to off. Lock out.	Attempt restart at CP-1.
 W-1	Hot Water Suction	Universal Valve Lockout	Isolation point on South side of .	Turn W-1 valve to closed position. Lock out.	Verify pressure has bled off.
 P-1	Pneumatic 120 PSI	Universal Valve Lockout	Isolation point on South side of .	Turn P-1 valve to closed position. Lock out.	Verify pressure has bled off.
 V-1	Valve Inlet	Universal Valve Lockout	Isolation point on South side of .	Turn V-1 valve to closed position. Lock out.	Verify pressure has bled off.
 G-1	Gas Natural Gas	Universal Valve Lockout	Isolation point on South side of .	Turn G-1 valve to closed position. Lock out.	Verify pressure has bled off.
 S-1	Steam Inlet	Universal Valve Lockout	Isolation point on South side of .	Turn S-1 valve to closed position. Lock out.	Verify pressure has bled off.

Kinetic Energy XXXXX	Be sure to wait until all moving parts have come to a complete stop before attempting to service machine.
Potential Energy Gravity	Be sure to lower all parts to lowest position or install blocks before attempting to service machine.
Thermal Energy	Be sure to wait until heat has dissipated from machine before servicing. Wear proper PPE before beginning work.
Hydraulic Energy	Hydraulic equipment can store energy. Ensure all pressures have bled off before proceeding.

DANGER

OPENING A GUARD DOES NOT CONSTITUTE A LOCKOUT
Any machine modifications must be shown in procedure. Contact safety dept. to update procedure.
Safety Is Your Responsibility!

DANGER

Appendix E



LOTO Inspection Form

To be filled out by a Facility Services Authorized Employee.

Type of machine or equipment being reviewed:	
Location of machine or equipment:	
Type of power source:	
Primary hazard of the machine or equipment:	
Who are the primary operator/maintenance personnel?	
<u>Authorized Employee(s)</u>	<u>Affected Employee(s)</u>

Inspection of LOTO Equipment (Circle yes or no)

Is the LOTO Policy and Procedure being maintained and updated?	YES / NO
Is the LOTO device(s) in good condition?	YES / NO
Is the machine or equipment being serviced in good condition?	YES / NO
Is the machine or equipment properly de-energized?	YES / NO
Is the LOTO device(s) is being used?	YES / NO
Is the LOTO device(s) properly installed?	YES / NO
Is the LOTO device(s) properly maintained?	YES / NO
Is there a LOTO procedure attached to the machine or equipment? If no, a procedure card must be created by using Appendix E.	YES / NO

Training

Has the affected employees been notified of the LOTO?	YES / NO
Have the employees performing the LOTO been trained?	YES / NO
Do any employees involved in the LOTO require re-training? Who?	YES / NO
<u>Name of person performing review:</u>	
<u>Date of review:</u>	

This review shall be performed by a supervisor or authorized person other than those utilizing the energy control.

- a. Review shall target and identify any deviations or problems.
- b. The inspector shall ensure that there is documentation available to indicate that the authorized employee has received training on the recognition of applicable specific training for the type and magnitude of the energy available, methods and means necessary for energy isolation, controls, procedures, and responsibilities.