



LP 4.9

Energy Control Lockout Tagout (LP4.9)

Effective:
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References: OSHA 29 CFR 1910.147

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Policy Owner:
Board of Trustees

Policy Administrator:
VP for Finance &
Administration

Affected Parties:
Employees

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1 Purpose

This policy establishes the Lockout/Tagout (LOTO) Program to ensure a safe and healthful working environment and to act as a performance standard for all Lander University employees.

1.1 This program sets forth standards for ensuring the safety of employees when performing maintenance, service, or cleaning of powered machinery by protecting them from the unexpected energization, startup, or release of hazardous energy. This will be accomplished by:

- 1.1.1 Establishing a safe and reliable method of shutting down and securing automatic machinery and equipment.
- 1.1.2 Prohibiting unauthorized and unexpected starting of machinery while it is being serviced, maintained, or cleaned.
- 1.1.3 Establishing responsibility for implementing and controlling lockout/tagout procedures.
- 1.1.4 Ensuring that proper and approved locks and/or other approved locking mechanisms will be utilized in lockout/tagout procedures.

2 Scope

- 2.1 This program applies to all employees of Lander University (including those in training) and temporary workers who perform maintenance, service, or cleaning of automatic machinery, including activities that could require the employee or temporary worker to:
 - 2.1.1 Remove or bypass a guard or other safety device.
 - 2.1.2 Place any part of the body in or around a point of operation or in a position that could potentially cause injury from moving parts of the machine or other hazardous energy.
- 2.2 The Safety and Regulatory Compliance Officer shall provide all contractors with a copy of this policy prior to the start of the job
- 2.3 All contractors and vendors performing maintenance, service, or cleaning of automatic machinery are responsible for:
 - 2.3.1 Complying with this policy.
 - 2.3.2 Coordinating all LOTO activities with Lander University personnel prior to implementation.
 - 2.3.3 Issuing safety locks to their personnel.
- 2.4 Exceptions:
 - 2.4.1 Minor tool changes, machine adjustments, and other minor servicing activities occurring during normal production operations are excluded if they are routine, repetitive, and necessary to the use of the equipment for production, provided that a reliable method to ensure that the machine remains deenergized is used during the process.
 - 2.4.2 Written LOTO procedures are not necessary for machinery that uses only a cord and plug as the only source of power.
 - 2.4.2.1 When performing service, maintenance, or cleaning of equipment that uses only a cord and plug as a single power source, a plug lock must be applied to the plug.
 - 2.4.2.2 The key to the lock on the plug lock device shall be in the exclusive control of the authorized employee who is performing the servicing, maintenance, or cleaning.

- 2.4.3 LOTO shall not be used to place equipment out of service when not related to protecting employees from accidental startup or release of energy.

3 Responsibilities

3.1 Safety and Regulatory Compliance Officer

The Safety and Regulatory Compliance Officer is the Plan Administrator and is responsible for:

- 3.1.1 Administering and maintaining the LOTO program.
- 3.1.2 Working with the maintenance team to ensure that the policy is implemented and enforced.
- 3.1.3 Ensuring that the program is evaluated on an annual basis.

3.2 Maintenance Managers/Supervisors

Maintenance Managers and supervisors are responsible for:

- 3.2.1 Ensuring that all authorized and affected employees are properly trained and provided with the information necessary to safely perform their tasks.
- 3.2.2 Ensuring that equipment-specific LOTO procedures have been developed for each machine with multiple power sources.
- 3.2.3 Ensuring that all equipment- specific LOTO procedures are reviewed on an annual basis and are current and adequate.
- 3.2.4 Ensuring that all employees follow the procedures of this program.

3.3 Employees

Employees are responsible for:

- 3.3.1 Following all procedures as outlined in this program.
- 3.3.2 Attending required training sessions when directed to do so.
- 3.3.3 Immediately reporting unsafe conditions to their supervisor.

4 Definitions

- 4.1 *Affected Employee*: An employee whose job requires the employee to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires the employee to work in an area in which such servicing or maintenance is being performed.
- 4.2 *Authorized Employee*: An employee who meets the following criteria:
- 4.2.1 Understands the principles of LOTO and the specific LOTO procedures for the equipment and machinery they are authorized to lock/tag out.
 - 4.2.2 Is able to locate the energy sources on the equipment, understands how to safely disconnect and release all residual energy, and tests the equipment to ensure complete de-energization.
 - 4.2.3 Has successfully completed LOTO training as described in section 9 of this policy.
 - 4.2.4 Has been designated by the Facilities Maintenance Manager to lock out equipment (includes those operating in a training capacity).
- 4.3 *Authorized Trainer*: An employee of Lander University who has been designated by the Safety and Regulatory Compliance Officer to deliver LOTO training.
- 4.4 *Cleaning (per this policy)*: Any cleaning activity in, on, or around automatic machinery which would require an employee to place any part of their body or clothing in a position that could potentially cause injury from moving parts of the machine (e.g., sweeping or wiping under or within one foot of moving parts).
- 4.5 *Energy source*: Any electrical, hydraulic, pneumatic, chemical, nuclear, thermal, kinetic (e.g., such moving parts as blades, flywheels, etc.) or other potential energy source (e.g., gravity, springs, pressure) that could endanger personnel. All energy sources for each piece of equipment with more than one source will be identified on the equipment-specific LOTO procedures.
- 4.6 *Energization*: The act of starting a machine or releasing stored energy that would cause the machine to have power.
- 4.7 *Equipment-specific LOTO procedures*: A set of instructions that indicate the specific required tasks to achieve a zero-energy state for a specific piece of equipment. Read each step of the procedure carefully before starting any task to ensure safety and understanding.
- 4.8 *Lockout point*: The point at which a device can be applied that isolates the source of energy to the equipment (e.g., an electrical disconnect, electrical plug, gate valve,

ball valve, air quick disconnect). “On/Off” buttons, selector switches, and other control circuit devices are not isolation points.

- 4.9 *Lockout/Tagout (LOTO)*: The placement of a lock and tag on each lockout point in accordance with an established machine-specific LOTO procedure, ensuring that the equipment is established at and remains at a zero-energy state.
- 4.10 *Multi-user lockout kit*: A lockout system that allows more than one authorized employee to each apply a personal lock to the same lockout point. This method gives each authorized employee the ability to maintain possession of a key for their personal lock. When this method is used, the machine will remain locked out until every lock is removed.
- 4.11 *Normal operations*: Utilization of a machine or equipment to perform its intended production function.
- 4.12 *Point(s) of operation*: The point(s) in machinery where work is performed (e.g., moving parts, etc.)
- 4.13 *Residual energy*: The differential energy remaining within a component after the energy source is closed off or disconnected.
- 4.14 *Service and/or maintenance*: Workplace activities (e.g., constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and/or servicing machines or equipment, including lubrication, cleaning, or unjamming of machines or equipment, and adjusting or making tool changes) where an employee could be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
- 4.15 *Testing/troubleshooting*: The process of re-energizing a machine for one of the following purposes:
 - 4.15.1 To trace a fault or problem in a mechanical or electronic system. Once the fault or problem has been identified, the machine must be locked out to complete the repair.
 - 4.15.2 To see if the repair has been successful. Once the success of the repair has been determined, the machine must be locked out until all guards have been properly reinstalled and the machine has been re-energized according to the Lockout/Tagout Releasing Steps.
- 4.16 *Zero-energy state*: A state at which all energy coming into the equipment is isolated, locked, and tagged out, along with ensuring that all non-lockable potential, thermal, and/or kinetic energy has been dissipated.

5 Lockout/Tagout Procedures

The employee who is completing the LOTO process must be an authorized employee as defined in section 4 of this policy.

5.1 Equipment Shut Down Sequence

The shutdown and restore-to-service sequence is printed on the LOTO procedures. It must be followed every time equipment is locked out.

- 5.1.1 Notify affected employees that the machine is about to be shut down and locked out.

- 5.1.1.1 Notification can be verbal, by use of sign, by barricade, etc.

- 5.1.2 Review all hazards and controls and review equipment-specific procedures; ensure that an authorized employee is completing the LOTO process.

- 5.1.3 Shut down the machine using normal stopping procedure (i.e., activate the stop button, etc.).

- 5.1.4 Isolate all energy sources by closing, blanking and blinding, or otherwise turning switches/disconnects to the "OFF" or "OPEN" position and all valves to the "OFF" or "CLOSED" position.

- 5.1.5 Apply locks, tags, and/or devices to the energy disconnects for each energy source present, as outlined in the machine's equipment-specific procedures.

- 5.1.5.1 If equipment-specific procedures do not exist for the machine, STOP, then notify the Safety and Regulatory Compliance Officer.

- 5.1.6 Release all stored energy if applicable.

- 5.1.7 Verify a zero-energy state by attempting to restart the equipment.

5.2 LOTO Releasing Steps – Equipment Start-Up

When assigned repairs or maintenance have been completed and the machine is ready for testing or returning to service, the following steps must be completed. These procedures can only be completed by authorized employees who are trained on equipment-specific procedures for the machine.

- 5.2.1 Verify that all work is complete, all guards are in place, and interlocks are reactivated.

5.2.2 Notify all affected employees that locks/tags are going to be removed and that the machine is ready for operation.

5.2.2.1 Ensure that all affected employees are safely positioned.

5.2.3 Verify that operating controls are OFF (NOT ON).

5.2.4 Ensure that the area is clear and remove all LOTO devices.

5.2.5 Restore power to the equipment.

5.2.6 Perform any necessary testing of the restored machine to ensure that it is operating properly.

5.2.7 Notify management that the work has been completed and the area has been returned to operational condition.

5.3 A LOTO flow chart is available in Appendix A for reference.

6 Equipment-specific Procedures

6.1 Equipment-specific LOTO procedures shall be written and maintained for all equipment and machinery with multiple energy sources for which service, maintenance, or cleaning is performed.

6.2 Procedures shall be created by an authorized employee who is knowledgeable about the equipment.

6.3 Form LP0001F1 Lockout/Tagout Procedures shall be used to create and document procedures.

6.4 Each written procedure that is new must be approved by the Safety and Regulatory Compliance Officer.

6.5 Specific LOTO procedures shall be attached to the equipment/machinery to which they apply (including both the front and back sheets of the procedures).

6.6 Each lockout point shall be identified on the machinery with either a label or tag that displays the number of the corresponding lockout point.

6.7 When new equipment or machinery is installed or introduced that has multiple energy sources, the equipment must be added to the LOTO program and written LOTO procedures must be developed (as described in section 6 of this policy) and approved by the Safety and Regulatory Compliance Officer

- 6.8 Once a year a review of LOTO procedures shall be completed by an authorized employee.
 - 6.8.1 The review shall ensure that all equipment or machinery with hazardous energy sources has been identified and that current, accurate, written LOTO procedures exist, where required
 - 6.8.2 The annual review of LOTO procedures shall be documented on:
 - 6.8.2.1 The LP0001F4 Lockout/Tagout Annual Review Tracker (see Appendix E).
 - 6.8.2.2 The equipment-specific procedures via a colored date sticker.
- 6.9 Revisions to the procedures shall be made when:
 - 6.9.1 Needed as identified by the annual review.
 - 6.9.2 Equipment is moved or modified.
 - 6.9.3 It is determined that the current procedures are inadequate or inaccurate.

7 Lockout/Tagout Rules

- 7.1 The Lander University Maintenance Department shall ensure that an adequate number and type of locks and tags for the applicable equipment exist to properly lock equipment out.
 - 7.1.1 All authorized employees shall be issued a sufficient number of personalized locks (based on the machinery with the greatest number of lockout points that the employee is authorized to lockout).
 - 7.1.2 All locks shall be individually keyed.
 - 7.1.3 The applicable authorized employee's name shall be written on the lock.
 - 7.1.4 Employees who are not authorized (as defined in section 4 of this policy) shall not be issued personalized locks.
 - 7.1.5 Personalized locks may only be used by the authorized employee to whom they are assigned and whose names are inscribed on the lock.
- 7.2 Only authorized employees(as defined in section 4 of this policy) may lockout or tagout equipment.

- 7.3 Affected employees must be notified by an authorized employee before the LOTO procedure is implemented and again when the machine has been returned to service.
- 7.4 When LOTO is implemented by an authorized employee, the authorized employee shall maintain, on their person, possession of keys to all lockout devices at all times.
- 7.5 If a situation occurs where a machine should remain locked out for multiple days or shifts, an authorized employee, designated by the Facilities Maintenance Manager, shall retain control of the applicable key(s).
- 7.6 LOTO shall be implemented during the following activities:
 - 7.6.1 When servicing the machine.
 - 7.6.2 When performing maintenance on the machine,
 - 7.6.3 When cleaning the machine (as defined in section 4 of this policy).
 - 7.6.4 When any activity in which a part of a person's body or clothing is placed in a position that could potentially cause injury from moving parts of the machine or any other hazardous energy.
- 7.7 If more than one authorized employee is performing service or maintenance on the equipment, a multi-user lockout device must be utilized and all parties must place their own lock on the device.
 - 7.7.1 Each employee involved in the process must maintain control of their own key, on their person, until the project is finished and the equipment has been released
 - 7.7.2 If an employee has completed their part of the project, but others are still working, the employee who has completed their work may remove their personalized lock.
- 7.8 If one authorized employee is performing service or maintenance on the equipment and passes the job off to another authorized employee before the job is finished, the first authorized employee must remove their lockout device(s) and the second authorized employee must immediately replace them with their lockout device(s).
 - 7.8.1 The second authorized employee shall ensure that all steps in the LOTO process have been followed before beginning work on the equipment.
- 7.9 If it becomes necessary to remove a lockout device and the authorized employee who applied the device is not available to do so, the following procedures must be followed:

- 7.9.1 The LP0001F3 Emergency Lock Removal Form shall be completed.
 - 7.9.2 The Facilities Maintenance Manager must verify that the authorized employee has left the building.
 - 7.9.3 The device may be removed under direction of the Facilities Maintenance Manager using bolt cutters or some other method.
 - 7.9.4 All reasonable efforts must be made to contact the authorized employee and inform that employee that the lockout device has been removed.
- 7.10 LOTO equipment and procedures shall not be used to place equipment “out of service” when not related to protecting employees from accidental startup or release of energy.
- 7.11 The use of interlocks and emergency stop buttons are never to be used for the purpose of locking out equipment.

8 Troubleshooting

- 8.1 If it becomes necessary to temporarily remove lockout devices during the process of performing testing or troubleshooting activities, the following steps shall be completed in the order listed below:
- 8.1.1 The area shall be cleared of all maintenance techs, employees, and personnel not essential for the completion of testing or troubleshooting.
 - 8.1.2 The area where the machine, the power sources for the machine, and the work area are located shall be blocked off with safety cones (or other comparable devices) to eliminate pedestrian traffic through the area.
 - 8.1.3 The area shall be cleared of all tools and unnecessary materials, as well as cleared of any potential slip or trip hazards.
 - 8.1.4 The completed and signed LP001F2 LOTO Troubleshooting Permit shall be posted immediately adjacent to the location of the troubleshooting/testing activities.
 - 8.1.5 The necessary lockout devices shall be removed.
 - 8.1.6 The machine shall be energized.
 - 8.1.7 The testing and/or troubleshooting activities (as defined in section 4 of this policy) shall be completed.

8.1.8 The machine shall be de-energized and the lockout devices re-applied or brought back into service.

8.1.9 The LP0001F2 LOTO Troubleshooting Permit shall be removed.

9 Training

9.1 Affected employees

9.1.1 Affected employees will be made aware of:

9.1.1.1 The purpose and use of LOTO procedures.

9.1.1.2 The prohibition on removing lockout or tagout devices.

9.1.1.3 The prohibition on attempting to operate machinery or equipment that is locked/tagged out.

9.1.2 Affected employees will be trained at the following frequencies

9.1.2.1 Upon initial hire (i.e., during orientation)

9.1.2.2 Annually

9.2 Authorized employees

9.2.1 Only authorized trainers (designated by the Safety and Regulatory Compliance Officer) are authorized to certify other employees in performing LOTO.

9.2.2 Employees who are authorized by the Facilities Operations Manager to conduct LOTO procedures will receive LOTO authorized training from an authorized trainer.

9.2.3 All training for authorized employees shall be documented.

9.3 Refresher Training

9.3.1 Refresher training for authorized employees shall occur at the following frequencies:

9.3.1.1 Annually, following the annual review of procedures (as described in section 6.8. of this policy).

- 9.3.1.2 When there is a change in machinery or equipment.
- 9.3.1.3 When there is a change in process that presents a new hazard.
- 9.3.1.4 When there is a change in LOTO procedures.
- 9.3.1.5 When equipment is moved to a different location.
- 9.3.1.6 When the authorized employee demonstrates a lack of understanding of specific LOTO procedures.

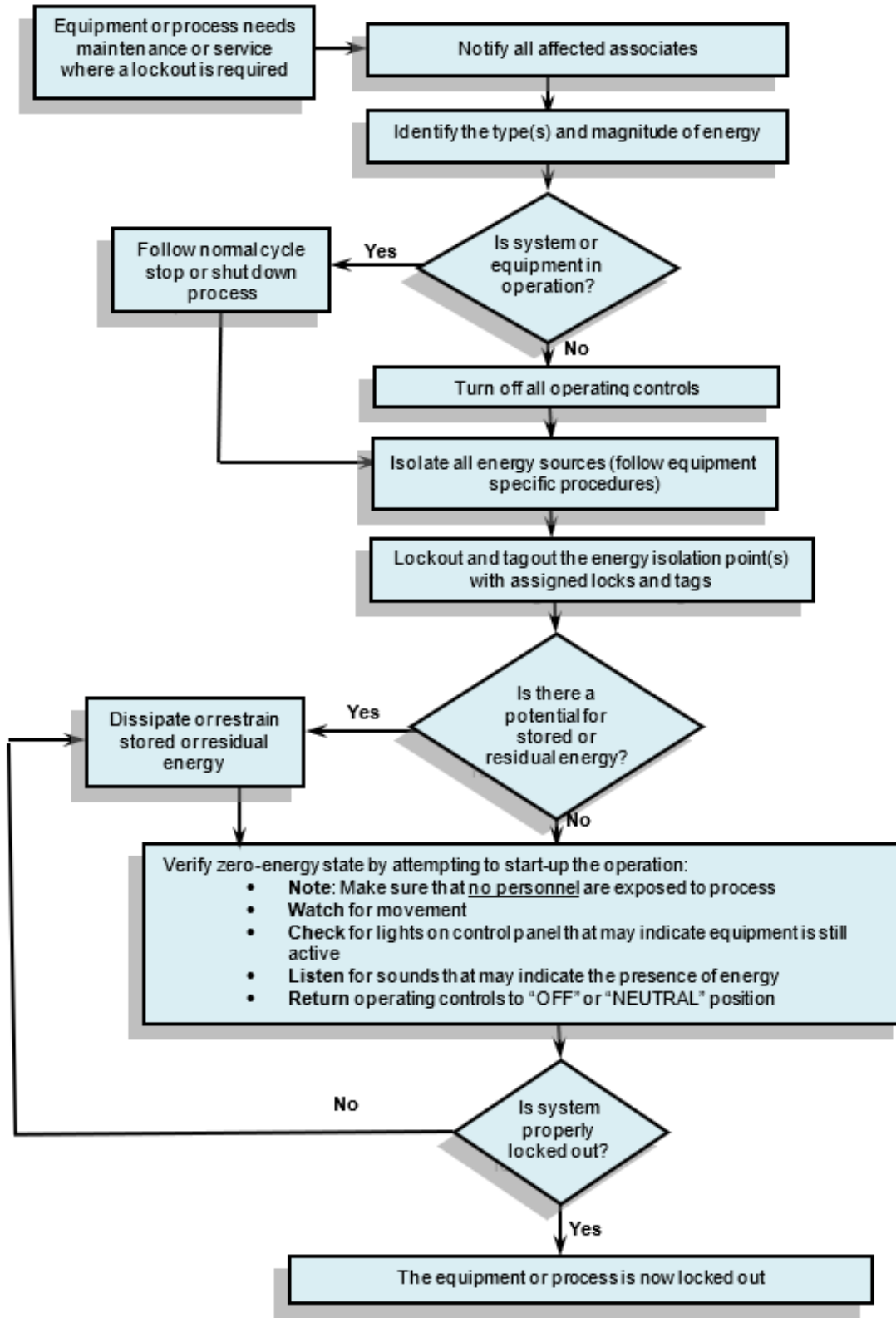
9.4 Training Records Retention

- 9.4.1 Initial training records for authorized employees shall consist of a written test and a skills check.
- 9.4.2 Refresher training records for authorized employees shall consist of a skills check.
- 9.4.3 Training records for authorized employees shall be retained for the length of their employment with Lander University.
- 9.4.4 Initial training records for affected employees shall be retained with the employee's orientation training paperwork in their training file.
- 9.4.5 Initial training record for affected employees shall be retained for the length of their employment with Lander University.
- 9.4.6 Records of refresher training for affected employees shall be retained for at least 1 year following training.

10 Policy Revision History

- First draft of policy submitted by the Vice President for Finance and Administration on 4/2/2024.
- Prepared for board review by policy coordinator on 4/4/2024.
- Reviewed by Board of Trustees Policy Committee on 4/7/2024.
- Reviewed and revised by Vice President for Finance and Administration on 4/11/2024.
- Approved by Lander University Board of Trustees on 4/30/2024.

Appendix A: Lockout/Tagout Flow Chart



Appendix B: LP001F1 Lockout/Tagout Procedures



**LOCKOUT/TAGOUT PROCEDURES
EQUIPMENT SPECIFIC**

Lockout/Tagout Procedures for:		Date Created:		<i>Page 1 of 2</i>	
Machine ID:		Date Reviewed/Revised (Annual Review Sticker)	Place Sticker Here	NUMBER OF LOCKOUT POINTS	
Type of Machine:					
LOCKOUT APPLICATION PROCESS					
<i>WARNING: These procedures can only be used by Authorized Employees who are trained on the lockout/tagout procedures for this machine. Failure to properly follow lockout/tagout procedures will result in disciplinary measures.</i>					
<ol style="list-style-type: none"> 1. Notify all affected Employees what machine/equipment will be shut down and locked out. 2. Review all hazards and controls. Review procedures. Ensure Authorized Employee is qualified. 3. Shut down machine by completing normal stopping procedure. 4. Isolate all energy sources by following equipment specific procedures. 5. Apply LOTO devices (locks and tags) 6. Release all stored energy if applicable. 7. Verify zero energy state by attempting to restart the equipment. 					
LOCKOUT POINTS (PHOTOS)					
Type	LOTO Point	Isolation Point Description	Application Method	Device	

LOCKOUT/TAGOUT RELEASING STEPS

WARNING: *These procedures can only be used by Authorized Employees who are trained on the LOCKOUT/TAGOUT procedures for this machine. Failure to properly follow LOCKOUT/TAGOUT procedures will result in disciplinary measures.*

1. Verify all work is complete and all guards are in place.
2. Remove all tools and any nonessential items.
3. Notify all affected Employees. Ensure they are safely positioned.
4. Verify that operating controls are off (not on).
5. Remove LOTO devices.
6. Restore power to the equipment.
7. Start equipment and monitor to ensure it is functioning properly.

DEFINITIONS

Authorized Employee - An employee who has been trained on the equipment specific LOCKOUT/TAGOUT procedures for the machine and who is authorized to lock or tag out the machine in order to perform service or maintenance on the machine.

Affected Employee - An Employee or temporary worker whose job requires him or her to operate or use a machine/equipment on which servicing or maintenance is being performed under LOCKOUT/TAGOUT or who works in an area in which such servicing or maintenance is being performed.

TYPES OF ENERGY SOURCES

Electrical	Hydraulic
Pneumatic (air or gas under pressure)	Fluids and Gases
Heat	Gravity
Mechanical Energy (energy stored in springs, etc.)	

Note: Replace below diagram with diagram of applicable machine.

LOCKOUT Point 2: Electrical Lever



NOTE: *This diagram is an example. Please replace with an accurate diagram of the machine to be locked out.*

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Appendix C: LP0001F2 LOTO Troubleshooting Permit



LOTO TROUBLESHOOTING PERMIT	
BEFORE REMOVING LOCKS AND TROUBLESHOOTING, PERMIT MUST BE COMPLETE AND POSTED ADJACENT TO THE AREA WHILE WORKING	
<p>Testing/Troubleshooting – This process may only be used for re-energizing a machine for one of the following purposes:</p> <ol style="list-style-type: none"> 1. To trace a fault or problem in a mechanical or electronic system 2. To test if a repair has been successful 	
Description of testing/troubleshooting:	
Why is testing/troubleshooting required?	
Can testing/troubleshooting be completed with machine de-energized? If no, why not?	
<u>Check each required action as completed. All actions must be completed in order listed:</u>	
<p>Preparing for Lock Removal</p> <ul style="list-style-type: none"> <input type="checkbox"/> Clear area of all Maintenance Techs, Associates, and personnel not essential for completion of testing or troubleshooting <input type="checkbox"/> Block off work area with safety cones, or other high visibility device, to restrict access to affected areas <input type="checkbox"/> Clear area of all tools, unnecessary materials, and any other tip hazards. Surrounding area floors must be clean and free from objects/debris <input type="checkbox"/> Post completed LOTO Troubleshooting Permit immediately adjacent to where troubleshooting/testing activities are taking place 	
<p>Removing Lock and Re-energizing (this section completed after troubleshooting is complete)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Remove all required locks <input type="checkbox"/> Re-energize machine <input type="checkbox"/> Complete testing/troubleshooting activities (as defined above) <input type="checkbox"/> Once testing/troubleshooting activities are complete, bring machine back into service or replace locks and continue working <input type="checkbox"/> Remove LOTO Troubleshooting Permit 	<div style="border: 1px solid red; padding: 5px; min-height: 80px;">Name(s) of Those Completing Troubleshooting:</div> <div style="border: 1px solid red; padding: 5px; display: flex; justify-content: space-between;"> Date: Time: </div>

Appendix D: LP0001F3 Emergency Lock Removal Form



Emergency Lock Removal Form

Procedure Instruction

Prior to conducting an emergency lock removal, the following steps must be completed:

1. The Facilities Operations Manager must verify that the Authorized Employee has left the facility.
2. The device may be removed under direction of the Facilities Operations Manager using bolt cutters or other method.
3. All reasonable efforts must be made to contact the Authorized Employee and inform him/her that the lockout device has been removed.

EMERGENCY LOCK REMOVAL FORM					
1	Verification of Employee Absence				
Employee absence verified?	YES	NO	Contact attempted before removal?	YES	NO
Was contact successful?	YES	NO			
Manager signature authorizing lock removal:	_____				
Signature of person removing lock (if different):	_____				
2	Device Removal				
Date: _____	Name assigned to remove lock: _____				
Location of lock/tag to be removed: _____					

Reason for emergency removal of lock/tag: _____					
3	Notification to Employee of Lock Removal				
Notice provided before employee's return to work?	YES	NO	Date: _____		
Copy provided to employee?	YES	NO	Date: _____		
I verify I received a copy of the emergency lock removal notice for the removal of my lock/tag.					
Employee signature: _____			Date: _____		

