

## Procedure 4.1501

### LOCK, TAG, AND TRY-ENERGY ISOLATION PROCEDURE

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#### **A. Scope**

This written procedure establishes guidelines for the control and isolation of hazardous energy (lock, tag, & try), employee training, and periodic inspections per Occupational Safety and Health Administration (OSHA) 29 CFR 1910.147. This procedure shall be used to ensure that all machines and equipment are isolated from all potentially hazardous energy (locked out) during service and/or maintenance activities, where the unexpected energizations, start up, or release of energy could cause injury.

#### **B. General**

1. This written procedure will cover any maintenance and/or servicing activities at Beaufort County Community College (BCCC), in which employees and/or students may come in contact with machines and/or equipment, where the unexpected energizations, start up, or release of energy could cause injury. This procedure will also apply whenever an employee or student is required to bypass a guard, place any part of his/her body into an area on a machine or piece of equipment, where work is actually performed (point of operation), or where an associated danger zone exists during a machine operating cycle. This program does not cover normal operations, unless the criteria listed above are met.
2. Lock, tag, and try is a hazardous energy control procedure used to ensure that machines and equipment are totally isolated from all energy sources (electrical,

hydraulic, pneumatic, kinetic, thermal, chemical, and radiation). Locks will be used to secure switches and valves in the OFF or SAFE position. Tags will be attached as a warning device indicating the machine or equipment may not be operated until the lock and tag are removed.

### C. Applicability

This procedure shall apply to all BCCC operations and worksites, including contractors, with respect to the control of hazardous energy during maintenance and/or servicing of machines or equipment

### D. Definitions

1. **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 lock and tag, or whose job requires him/her to work in an area in which such servicing or maintenance is performed.
2. **Authorized Employee:** A person who locks out a machine or piece of equipment to perform servicing or maintenance on that machine or equipment. An authorized employee and an affected employee may be the same person, when the affected employee's duties also include performing maintenance or service on a machine or equipment that must be locked out and tagged.
3. **Energized:** Connected to an energy source or containing residual or stored energy.
4. **Energy Isolating Device:** A mechanical device that physically prevents the transmission or release of energy, including, but not limited to, the following:
  - a. a manually operated electrical circuit breaker
  - b. an electrical disconnect switch
  - c. 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
  - d. a slide gate
  - e. a slip blind or blind flange
  - f. double line valves with an open bleeder
  - g. removal of an ignition key from a vehicle or construction equipment
  - h. a block to prevent an object from falling on a person
  - i. any similar device used to block or control energy

**NOTE: this term does not include a push button, selector switch, or other control circuit type devices.**

5. **Lockout:** the placement of a lockout device on an energy isolating device, in accordance with this procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
6. **Lockout Device:** a device that utilizes a positive means, a keyed lock, to hold an energy isolating device in the SAFE or OPEN or OFF position and prevent the energizing of a machine or piece of equipment.

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7. **Maintenance and/or Servicing:** 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** energizations or startup of the equipment or release of hazardous energy.
8. **Proper electrical installation:** Any new installation or revisions to existing electrical equipment shall comply with all OSHA regulations, the National Electric Code, and all state and local building codes. When work is complete, the work shall be inspected by the Director of Maintenance for compliance.
9. **Tagging:** the placement of a tag on an energy isolating device, in accordance with this procedure, to indicate the reason that the energy isolating device and the equipment being controlled may not be operated until the lock and tag are removed.  
**TAGS CANNOT BE USED WITHOUT A LOCK**
10. **Try/Verification:** this is the last step in this procedure. It involves methods of verifying that all forms of energy are safe and no operation is possible. The employee and/or contractor SHALL try all push buttons, valves, ignition switches, and any other method of starting or using a machine or equipment, before any maintenance or servicing begins.

### E. Procedure

1. This procedure applies to the control of hazardous energy during maintenance and/or servicing of machinery and equipment. Normal operations are not covered by this procedure. Maintenance and/or servicing which takes place during normal operations is covered by this procedure **ONLY IF:**
  - a. An employee is required to remove or bypass a guard or other safety device.
  - b. An employee is required to place any part of his/her body into an area on a machine or piece of equipment at the point of operation.
  - c. Where an associated danger zone exists during the machine operating cycle.
2. The exception to this is minor tool changes and adjustments and other minor servicing activities, which take place during normal operations. These activities include those that are routine, repetitive, and integral to the use of the equipment for work and instruction, provided that the work performed uses alternative measures which provide effective protection for the employee.
3. This procedure does not apply to work on cord and plug connected electric equipment, if the employee has exclusive control of the disconnected cord and plug.
4. Lockout devices shall not be used on machinery or equipment that is designated to be removed from service, once all types of energy have been disconnected from the machine or equipment.

## F. Energy Control Program

1. **Authorization:** Only authorized employees or contractors, who have been trained in the type and magnitude of the energy, the hazards of the energy, the methods or means of isolating and/or controlling energy, the means of verification of effective energy control, and the purpose of the procedures to be used, may begin to perform maintenance or servicing of machinery or equipment under this lock, tag, and try procedure.
  
2. **Training** will be provided to employees as follows:
  - a. Authorized employees will be trained in recognition of the type and magnitude of hazardous energy sources, the hazards of the energy, the methods or means necessary for isolating and/or controlling energy, the means or verification of effective energy control, and the purpose of the lock, tag, and try procedures to be used. (See Training Documentation Form below)
  - b. Affected employees will be instructed in the purpose and use of this energy control procedure.
  - c. Other employees and machine operators, who work in an area where energy control procedures may be utilized, shall be instructed about the purpose of this procedure and the prohibition on tampering or attempting to restart or reenergize machines or equipment which have been locked out and tagged.
  - d. Employee retraining will be accomplished:
    - i. Whenever there is a change in job assignments, a change in machines, equipment, or processes, that present a new hazard or when there is a change in the energy control procedures.
    - ii. Whenever a periodic inspection reveals, or whenever there are deviations from or inadequacies in an employee's knowledge, or use of the energy control procedures
    - iii. To reestablish proficiency or to introduce new or revised control methods or procedures
  
3. **Documentation of Training**

Employee name and date of training will be used to document all training. The BCCC Health & Safety Coordinator will maintain training records.
  
4. **Hardware and Materials**
  - a. Lockout devices must be identified as such and not used for any other purpose. All lockout locks used for energy isolation will be kept in a lockout box at BCCC building locations. The Vice President, Administrative Services, or his/her designee, is responsible for distribution of the locks and security of keys.
  - b. Lockout locks and tags must be capable of withstanding environmental conditions in the workplace. Locks should not rust or tags deteriorate.
  - c. All tags will be standard with a "DANGER-DO NOT OPERATE" warning. See Approved Tags below.

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- d. Each authorized employee will receive one lock and one key. The second key will be maintained in a locked supervisory key box in the employee's department.

### 5. Energy Control Procedures

- a. Application of locks and tags: the following information relates to the steps to be followed before work on equipment or machinery has been started. Application of locks and tags shall be performed in the following sequence:
  - i. Notification: Before lock and tag procedures begin, employees, who operate the machine or equipment, or those, who work in the area around the machine or equipment, must be notified that a procedure under lock and tag will be performed on their machine or equipment. The notification may be made by the employee performing the work or by a designated BCCC employee.
  - ii. Preparation for Shutdown: Before a machine or piece of equipment is isolated, the employee(s), who will perform the lock and tag, must have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, the method or means of isolating and/or controlling the energy, the means of verification of effective energy control, and the purpose of the procedures to be used.
  - iii. Machine or Equipment Shutdown: The machine or equipment must be shut down in an orderly fashion, in order to avoid any additional or increased hazard(s) to employees or damage to the machine or equipment, as a result of de-energization.
  - iv. Machine or Equipment Isolation: All energy isolating devices that are needed to control the energy to the machine or equipment, must be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
  - v. Applying Locks and Tags: The person(s) performing the lockout must attach a lock and tag to each energy isolating device. These devices must be placed in a manner, so that they will hold the energy isolating devices in the "SAFE" or "OFF" or "OPEN" position
    - a. If multiple persons will work on the machine or equipment, see "Group Lockout" below.
    - b. A tag shall never be used in place of a lock on any energy isolating device that is capable of being locked.
    - c. If a tag cannot be attached directly to a lock, it must be located as closely as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
    - d. Removal of an ignition key from vehicles or construction equipment OR disconnecting batteries OR locking the Master Battery Switch are acceptable means of isolating energy sources in vehicles or construction equipment. Additionally, a "Danger-Do Not Operate" tag shall be placed on the steering wheel or operating levers of the

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- machine or equipment to notify anyone that the machine or equipment is out of service for maintenance or repair.
- vi. Verification of Isolation-this is the “TRY” part of “lock, tag, and try”: Before starting work on a machine or equipment, the authorized employee must verify that the isolation and de-energization of the machine or equipment has been effective. This includes, but is not limited to:
    - a. Mechanical: Checking the position of valves or blanking/blinding lines, utilizing pressure gauges to determine if the supply is under pressure, or in a vacuum state, and ensuring blocks or other devices are in place to isolate movement.
    - b. Electrical: A qualified person shall use test equipment to test the circuit elements and electrical parts that are exposed to verify that parts are de-energized; determine if any energized condition exists from inadvertently induced voltage or backfeed voltage, even though specific circuits are presumed to be de-energized, and, if testing over 600 volts AC/DC nominal, test equipment shall be tested immediately before and after testing.

### **6. Release From Lock and Tag**

The following information relates to the steps to be followed once the work or activity on machinery or equipment has been completed, and the unit is to be placed back in service. Release from Lock and Tag shall be performed in the following sequence:

- a. Inspect the Work Area: Ensure that all non-essential items and employees have been removed or safely positioned, and machine and equipment components are operationally ready.
- b. Initial Employee Notification: Before locks and tags are removed and before machines or equipment are re-energized, affected employees shall be notified that the locks and tags are being removed.
- c. Removal of Locks and Tags: The employee who applied the lock and tag shall remove his/her lock and tag from each energy isolating device. If the authorized employee, who applied the lock and tag, is not available to remove it, the lock and tag may be removed by the supervisor, as long as:
  - i. The authorized employee, who applied the lock and tag, is not on campus.
  - ii. A reasonable effort has been made to contact the employee to advise them of the device removal.
  - iii. The employee has been advised before returning to work
  - iv. The supervisor applies his/her own lock and tag before removing the employee's lock
  - v. The employee's lock is removed by using the supervisory key
  - vi. The employee's lock is placed in the supervisory lock box and given to the employee at the first opportunity

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- vii. If bolt cutters are used to remove a lockout lock, the employee's supervisor and the Director, Campus Operations must give prior written authorization to cut the lock before the lock is cut off.
- d. Final Employee Notification: after locks and tags are removed and **before** a machine or equipment is re-energized or started, affected employees shall be notified that the locks and tags have been removed.
- e. Energize the machine or equipment and proceed with testing and positioning
- f. De-energize all systems and proceed with energy control procedures for application of locks and tags, if further work/repair must be done.
- g. Before the machine or equipment is returned to normal service, ALL guards will be returned to their respective places and secured as per the manufacturer's specification.
- h. Follow the machine or equipment's specific startup procedures.

### 7. Testing or Positioning Machines and Equipment

In situations where locks and tags need to be temporarily removed from the energy isolating it for testing or positioning, the procedure below shall be followed:

- a. Inspect the Work Area: Ensure that all non-essential items and employees have been removed or safely positioned and machine or equipment components are operationally ready.
- b. Initial Employee Notification: Before locks and tags are removed and before machines and equipment are energized, affected employees shall be notified that the locks and tags are being removed.
- c. Removal of Locks and Tags: The employee who applied the lock and tag shall remove each lock and tag from each energy isolating device. If the authorized employee, who applied the lock and tag is not available to remove it, the device may be removed by the supervisor, as long as:
  - i. The authorized employee, who applied the lock and tag, is not on campus.
  - ii. A reasonable effort has been made to contact the employee to advise them of the device removal.
  - iii. The employee has been advised before returning to work
  - iv. The supervisor applies his/her own lock and tag before removing the employee's lock
  - v. The employee's lock is removed by using the supervisory key
  - vi. The employee's lock is placed in the supervisory lock box and given to the employee at the first opportunity
  - vii. If bolt cutters are used to remove a lockout lock, the employee's supervisor and the Director, Campus Operations must give prior written authorization to cut the lock before the lock is cut off.

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- d. Final Employee Notification: after locks and tags are removed and **before** a machine or equipment is re-energized or started, affected employees shall be notified that the locks and tags have been removed.
- e. Energize the machine or equipment and proceed with testing and positioning
- f. De-energize all systems and proceed with energy control procedures for application of locks and tags, if further work/repair must be done.
- g. Before the machine or equipment is returned to normal service, ALL guards will be returned to their respective places and secured as per the manufacturer's specification.

### 8. Group Lock and Tag

When maintenance and/or service work is performed by more than one employee, or in conjunction with another department, group, or contractor, a procedure shall be utilized, which affords each employee a level of protection equivalent to that provided by the implementation of a personal lock and tag. The following procedure shall be used for group lock and tag application:

- a. When machine or equipment maintenance or servicing involves more than one employee and/or more than one crew, including contractors, or department, one authorized employee must be designated to take primary responsibility to coordinate the affected work and ensure continuity of protection for all.
- b. The designated employee is responsible to coordinate activities for the entire group to ensure that the application of locks and tags procedure and the release from locks and tags procedure are followed by each participating authorized employee.
- c. The designated employee has primary responsibility for providing the group locks, tags, and "scissors", ensuring all employee notifications are given, and that all procedures are followed as stated in this procedure.

### G. Revision History

Date	REV#	Changes
5/19/2017	4	Annual Review by H&S Committee
7/7/2016	3	Annual Review by H&S Committee
8/24/2015	2	Approved by Senior Staff
6/1/2015	1	Updated IAW OSHA Standards
February 1993	0	New Issue

### H. Approved Tags





**References**

**Legal References:** 29 CFR 1910.147

**SACSCOC References:** CS 3.11.2

**Cross References:** [Safety Control Measures Policy](#)

**History**

**Senior Staff Review/Approval Dates:** 11/6/13

**Board of Trustees Review/Approval Dates:** *Enter date(s) here*

**Implementation Dates:** *Enter date(s) here*