

# CITY OF FORT BRAGG

## LOCKOUT/BLOCKOUT PROGRAM

### A. PURPOSE

It is the City's policy to protect the health and safety of employees through the establishment and enforcement of this Lockout/Blockout Program (Program).

#### Application

This Program applies to the cleaning, repairing, servicing, setting-up and adjusting of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.

For the purposes of this Program, cleaning, repairing, servicing, and adjusting activities shall included unjamming prime movers, machinery, and equipment.

### B. DEFINITIONS

For purposed of this Program the following definitions apply:

1. "**Affected employee**" means an employee whose job requires him/her to operate or use a machine or equipment on which cleaning, repairing, servicing, setting up, or adjusting operations are being performed under lockout or Blockout, or whose job requires the employee to work in an area in which such activities are being performed under lockout or Blockout.
2. "**Authorized employee or person**" means a qualified person who locks out or tags out specific machines or equipment in order to perform cleaning, repairing, servicing, setting up, and adjusting operations on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing cleaning, repairing, servicing, setting up, and adjusting operations covered under this Program.
3. "**Locked out**" means the use of devices, positive methods and procedures, which will result in the effective isolation or securing of prime movers, machinery and equipment from mechanical, hydraulic, pneumatic, chemical, electrical, thermal, or other hazardous energy sources.
4. "**Normal Production Operation**" means the utilization of a machine or equipment to perform its intended production function.
5. "**Participant**" shall mean any other person(s) engaged in the repair, adjustment, testing, or setting up operation in addition to the qualified operator or craftsman having control of the machine operating station.
6. "**Prime Mover**" means the source of mechanical power for a machine.

## **C. POLICY**

The following rules apply when performing lockout/Blockout procedures:

### **1. Cleaning, Servicing, and Adjusting Operations**

- a. Machinery or equipment capable of movement shall be stopped and the power source de-energized or disengaged, and, if necessary, the moveable parts shall be mechanically blocked or locked out to prevent inadvertent movement, or release of stored energy during cleaning, servicing, and adjusting operations.
- b. Accident prevention signs or tags, or both, shall be placed on the controls of the power source of the machinery or equipment.
- c. If the machinery or equipment must be capable of movement during this period in order to perform the specific task, the supervisor shall minimize the hazard by providing and requiring the use of extension tools (e.g., extended swabs, brushes, scrapers) or other methods or means to protect employees from injury due to such movements. Employees shall be made familiar with the safe use and maintenance of such tools, methods, or means, through training.

### **2. Repair Work and Setting Up Operations**

- a. Prime movers, equipment, or power-driven machines equipped with lockable controls or readily adaptable to lockable controls shall be locked out or positively sealed in the "off" position during repair work and setting up operations.
- b. Machines, equipment, or prime movers not equipped with lockable controls or readily adaptable to lockable controls shall be considered in compliance with this Program when positive means are taken, such as de-energizing or disconnecting the equipment from its source of power, or other action which will effectively prevent the equipment, prime mover, or machine from inadvertent movement or release of stored energy.
- c. In all cases, accident prevention signs or tags, or both, shall be placed on the controls of the equipment, machines, and prime movers during repair work and setting up operations.

### **3. Materials and Hardware**

- a. The City shall provide accident prevention signs, tags, padlocks, seals or other similarly effective means which may be required for cleaning, servicing, adjusting, repair work or setting up operations.
- b. Signs, tags, padlocks and seals shall have means by which they can be readily secured to the controls.
- c. Blockout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.

### **4. Repetitive Process Machines**

- a. On repetitive process machines, such as numerical control machines, which require power or current continuance to maintain indexing and where repair,

adjustment, testing or setting up operations cannot be accomplished with the prime mover or hazardous energy source disconnected, such operations may be performed under the following conditions:

- i. The operating station where the machine may be activated must at all times be under the control of a qualified operator or craftsman.
- ii. All participants must be in clear view of the operator or in positive communications with each other.
- iii. All participants must be beyond the reach of machine elements which may move rapidly and present a hazard to them.
- iv. Where machine configuration or size requires that the operator leave his control station to install tools, and where machine elements exist which may move rapidly if activated, such elements must be separately locked out by positive means.
- v. During repair procedures where mechanical components are being adjusted or replaced, the machine shall be de-energized or disconnected from its power source.

#### **5. Hazardous Energy Control Procedures**

- a. A hazardous energy control procedure shall be developed and utilized by the City when employees are engaged in the cleaning, repairing, servicing, setting up, or adjusting of prime movers, machinery and equipment.
  - i. The procedure shall clearly and specifically outline the scope, purpose, authorization, rules and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance, including but not limited to the following:
    - (1) A statement of the intended use of the procedure;
    - (2) The procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy;
    - (3) The procedural steps for the placement, removal, and transfer of lockout devices and Blockout devices and responsibilities; and
    - (4) The requirements for testing a machine or equipment, to determine and verify the effectiveness of lockout devices, Blockout devices, and other hazardous energy control devices.
  - ii. The City's hazardous energy control procedures shall be documented in writing.
    - (1) The City's hazardous energy control procedure shall include separate procedural steps for the safe lockout/Blockout of each machine or piece of equipment affected by the hazardous energy control procedure
    - (2) Exception to Subsection 6ii(1): The procedural steps for the safe lockout/Blockout of prime movers, machinery or equipment may be used

for a group or type of machinery or equipment, when either of the following two conditions exist:

(a) Condition 1:

- (i) The operational controls named in the procedural steps are configured in a similar manner; and
- (ii) The locations of disconnect points (energy isolating devices) are identified; and
- (iii) The sequence of steps to safely lockout or Blockout the machinery or equipment are similar.

(b) Condition 2: The machinery or equipment has a single energy supply that is readily identified and isolated and has no stored or residual hazardous energy.

## 6. **Periodic Inspection**

- a. The City shall conduct a period inspection of the energy control procedure(s) at least annually to evaluate their continued effectiveness and determine necessity for updating the written procedure(s).
  - i. The periodic inspection will be performed by an authorized employee or person other than the one(s) utilizing the hazardous energy control procedures being inspected.
  - ii. Where lockout and/or Blockout is used for hazardous energy control, the periodic inspection shall include a review between the inspector and authorized employees of their responsibilities under the hazardous energy control procedure being inspected.
  - iii. The City shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the hazardous energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

## 7. **Outside Servicing Personnel**

- a. Whenever outside servicing personnel are to be engaged in activities covered by this Program, the on-site City's lockout or Blockout procedures shall be followed.

## 8. **Training**

- a. Authorized employees shall be trained on hazardous energy control procedures and on the hazards related to performing activities required for cleaning, repairing, servicing, setting up, and adjusting prime movers, machinery, and equipment.
- b. Each affected employee shall be instructed in the purpose and use of the energy control procedures.
- c. All other employees whose work operations may be in an area where energy control procedures may be utilized shall be instructed about the prohibition

relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.

- d. Such training shall be documented.

## **APPENDIX A**

### **HAZARDOUS ENERGY CONTROL PROCEDURES**

#### **Intended Use**

These procedures are intended to be used when locking out and/or tagging out machinery and equipment prior to maintenance or construction in order to prevent the mode of power from injuring the employee(s) during the process of performing the maintenance or construction.

Safe practices require that lockout/Blockout procedures be followed when working on electrical and mechanical equipment. Lockout devices and Blockout devices are intended to protect the employees who are working on the system being shut down. They are not to be used to discourage tampering, to prevent unauthorized operation, or for any other purposes.

#### **Responsibility**

Each City employee is responsible for reading this policy and signing his or her Personal Training Log. Each supervisor is responsible for training employees on these procedures.

#### **Procedural Steps**

1. All tags and locks shall be identified with the employee's name.
2. The City uses the "One lock / One key" system which means that one lock, with one key, is issued to an employee. Issuance of the lock and key will be documented. A multiple lock device may be used.
3. Employees are never to give their key or lock to another employee.
4. If the employee is unable to apply the lock he/she should immediately contact the supervisor.
5. Employee must first determine what energy source needs to be locked out.
6. Employee must determine which sequence will be used to assure that there is no damage to the equipment or the employee.
7. Employee must determine who will need to apply locks and tags. If more than one employee is working on the equipment being repaired, use the Buddy System. All employees working on the equipment must place a tag and lock on the equipment being repaired.
8. All electrical equipment will be locked out and tagged out at the power source. Equipment that is plugged in will use a plug shield lock.
9. The circuits to be worked on will be tested with an approved test prior to the start of maintenance.
10. Blocking or blanking of any energy source is required.

11. Any valved energy source will be locked out and tagged. This includes water, air, steam, hydraulic, or pump valves.
12. Be sure all stored energy is relieved from all systems prior to starting any maintenance.
13. Follow the City's approved maintenance procedures.
14. Remove any blocking prior to the next step.
15. All employees involved must meet at the lock/tag location to be accounted for before removing locks and tags.
16. All guards shall be in place and all tools accounted for before removing locks and tags.
17. All employees must be positioned safely before re-energizing equipment.
18. All controls must be in the neutral or off position before re-energizing equipment.
19. When all of the above conditions are met, equipment may be re-energized.

### **Specific Logout/Blockout Procedures**

#### **1. Disconnect Electrical Power:**

- When a circuit must be opened for repairs, alterations, or examination, immediately lock it, block it open, or remove all fuses.
- Attach "DANGER – DO NOT OPERATE" tags to all open devices. Sign and date the tags, stating the reason for disconnect.
- Put your own lock on the open disconnect. Use multiple locking devices where necessary.
- When it is not possible to install a lock, secure the circuit by another practical and safe means and attach a completed tag.
- Switches that open only the control circuit (e.g., "lock-stop stations") are not positive disconnects and shall not be used for lockout protection.
- Do not close an open disconnect unless absolutely certain that it is safe to do so, even if no tag has been attached.
- Immediately report to your supervisor any equipment that does not have proper and safe disconnecting means. (The plug and receptacle of cord-connected equipment constitute adequate disconnecting means.)
- Do not remove another person's lock.
- Contractors shall furnish and use their own locks.

#### **2. Secure Mechanical Components:**

- Bleed down steam, air, or hydraulic cylinders.
- Block valves with chain and lock.
- Attach "DANGER" tag, sign it, date it, and state the reason for isolation.
- Block gears, dies, and other mechanisms.
- Release coiled springs, spring loaded devices, and securing cams.
- Put blocks under equipment that might descend, slide, or fall.

- Put blocks or stands under raised vehicles and equipment to protect against failure of hoists, jacks, or elevated equipment.

### 3. **Electrical Safety Tips:**

- Never modify a plug by bending or removing the prongs. When plug prongs are bent, loose, or missing, replace the device.
- Cord adapters used to defeat the ground connection (e.g., 3-prong to 2-prong adapters) should not be used.
- All receptacles and any electrical conductors must be sufficiently grounded.
- If plug prongs break off and remain in the receptacle slots after insertion or withdrawal, do not attempt to remove them.
- Receptacles should be mounted firmly in their enclosures and should not move when the plug is inserted. Loose receptacles can cause short circuits.
- If you discover loose receptacles or other faulty electrical equipment, it should be removed from service or tagged out until a qualified electrician can make repairs.
- Damaged electrical enclosures such as switches, receptacles, and junction boxes should be reported immediately.
- Extension cords should be used only when necessary and only on a temporary basis. Extension cords should not be used in place of permanent or fixed wiring.
- Make sure all extension cords are the right size or rating for the tool you're using. The diameter of the extension cord being used should be equal to or greater than the cord of the appliance being used.
- Keep all electrical cords away from areas where they may be pinched, such as off the floor and out of walkways and doorways. Where possible, move the electrical appliance closer to the outlet.
- Do not use any appliance or extension cord that exhibits signs of wear, such as frayed insulation or exposed wiring. To insure safe operation, all electrical equipment should be visually inspected before use.
- Never staple, nail, or otherwise attach extension cords to a surface.
- Never unplug an appliance by pulling on the cord; always remove by holding the plug.
- Keep the floor in your workplace completely dry.
- Keep all electrical equipment away from any source of water unless the appliance is rated for use around water, such as a wet-dry shop vacuum.
- Ground fault circuit interrupters (GFCI's) should be used as much as possible. In any wet, damp, or moist environment, GFCI's are required.
- All electrical panels shall be unobstructed, have a minimum clearance of 36", and shall be easily accessible.
- Keep dust and lint off electrical panels, receptacles, and appliances.
- Electrical panel doors should be closed and latched when not in use.
- Keep all combustible materials away from electrical equipment.
- Attempt to limit one appliance per outlet. However, if more than one appliance is to be used for each circuit, an approved plug strip with circuit breaker should be used.

- Always turn off a tool or appliance before disconnecting it to avoid exposure to live electrical parts.
- Proper illumination shall be provided in all areas where electrical hazards are apt to be encountered and an emergency lighting system should be in place as well.
- All energized parts of electrical circuits and equipment shall be guarded against accidental contact by approved cabinets or enclosures.
- Employees who regularly work on or around energized electrical equipment shall be trained in the proper methods of cardiopulmonary resuscitation.
- Where electrical shock hazards exist, first-line and back up protection shall be provided to prevent access to energized circuits and parts. This protection includes using lockouts, grounding hooks, barriers, and rubber mats.
- In places where electrical hazards exist, there shall be conspicuous visual indications of ON and OFF conditions, the type of hazard, and its exact location.
- Bench tops and bench edges in the immediate work area should be non-conductive and only a minimum of connected equipment should be on the bench tops. Rubber matting of adequate breakdown voltage should be used.
- Adequate and workable lockout/Blockout procedures shall be used.
- When any equipment may produce sparks or arcing during normal operation, safety glasses must be used at all times.
- Proper personal protective equipment, such as a hard hat, safety glasses, arm mats, and gloves should be worn when maintaining any electrical equipment.
- When using tools near electrical hazards, all tools must have a double insulated casing to prevent contact with energized parts.
- Never work alone on a live circuit.
- Be acquainted with all electrical hazards that may be encountered in your work area.
- Notify your supervisor of any potential electrical hazard that may be going unnoticed.

#### 4. **High Voltage Electrical Safety Tips:**

- In addition to the recommendations for general electrical safety, there are more stringent rules that apply to high voltage operations.
- High voltage pertains to electrical equipment that is operating at more than 600 volts in terminal to terminal operation or at more than 300 volts in voltage to ground operation. In addition, low voltage, high current AC or DC power supplies are also considered to be high voltage appliances.
- All switches, circuit breakers, and other control devices that are in high voltage equipment shall be labeled as such.
- For a more comprehensive listing of proper high voltage maintenance and operation, check the Code of California regulations, Title 8, High Voltage Electrical Safety Orders and/or the National Electrical Code.

#### 5. **Hazards of Working with High Voltage:**

- Care must be taken to insure that unknown parties do not come in contact with energized parts. This can occur when there is a remote on/off switch relative to the energized conduits.

- Insure that terminal voltage ratings can withstand any surges that may occur due to electrical faults or switching transients.
- Overloading or improper cooling can cause excessive temperature rises, resulting in equipment damage.
- Be aware of output circuits even after input power is turned off to the system. Parallel power sources and energy storage devices such as capacitors can cause damage.
- When power supplies serve more than one piece of equipment, switching errors can result in energizing the wrong equipment or load, creating possible hazards for nearby personnel.
- Over-current protective devices such as fuses and circuit breakers may not adequately limit or interrupt the total inductive energy and fault current in highly inductive DC systems.

#### 6. **Pertinent Design and Construction Considerations:**

- Provide isolation devices or physical barriers to prevent high voltage stored energy from being dissipated in a low voltage supply and/or control circuits.
- Provide a switch and/or fixed bleeder resistor in the output circuit to discharge the power supply when the input power is turned off.
- Equip all power supplies with lockout capability.
- Provide alarms, signs, or lights to warn personnel when the supply is energized.
- Minimize the number of control stations for each power supply (preferably only one), and provide emergency stop controls at all remote power supply locations.

#### 7. **Safe Operating Procedures:**

- Prior to operation, inspect the power supply and all protective devices.
- Employees shall be prohibited from working alone on energized lines or equipment over 600 volts.
- Before entering power supply or associated equipment enclosure, take the following precautions:
  - ★ De-energize the equipment.
  - ★ Open and lockout the main input power circuit breaker.
  - ★ Check for auxiliary power circuits which could still be energized.
  - ★ Inspect automatic shorting devices to verify proper operation.
  - ★ Short the power supply from terminal-to-terminal, and terminal-to-ground with grounding hooks.
- Label equipment to identify input power sources and label input power sources to identify their connected power supply loads.
- Equipment that is remotely controlled or unattended while energized should be labeled with emergency shutdown instructions and identification of personnel to contact in case of emergency.