PURPOSE: It is the intent of the Division of Facilities to provide every employee with a safe and healthful working environment. The Division of Facilities administration feels that any Facilities employee who, during the course of their employment activities, are required to service and maintain machines/equipment should be protected.

This procedure establishes the minimum requirements for the lockout or tagout of energy isolating devices. It shall be used to ensure that the machines or equipment are isolated from all potentially hazardous energy, and locked out or tagged out before employees perform any servicing or maintenance activities where the unexpected energization, start-up or release of stored energy could cause injury.

This Lockout/Tagout Program, as set forth in the following manual, applies to activities such as, but not limited to: erecting, installing, constructing, repairing, adjusting, inspecting, cleaning, operating, or maintaining the machine/equipment/process.

This Program applies to energy sources such as, but not limited to: electrical, mechanical, hydraulic, pneumatic, chemical, thermal, compressed air/gas, stored energy (such as in springs), and potential energy from suspended parts (gravity).

DEFINITION:

**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, whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**Authorized employee:** An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. The following shops can perform lock-out and tag-out on electrical and stored energy sources: Electric, HVAC, Electronics, Utilities, Vet Med and Salina Maintenance Shops. All other shops can perform mechanical stored energy lock-out and tag-out.

**Principal authorized employee:** An authorized employee who has been assigned the responsibility for a set number of authorized employees in a crew, department, or other group, who are working under the protection of a group lockout/tagout device.
Primary authorized employee: An authorized employee who has been assigned the responsibility of coordinating the overall lockout/tagout control when more than one crew, department, or other group is involved; coordinates the affected work forces and ensures the continuity of protection. For example, a Project Manager.

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.

Cord and Plug-Connected Equipment: Equipment that is powered by an electrical energy sources that can be shut down by removing the cord and plug from the energy source.

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 sources such as but not limited to transferred energy electromagnetic fields.

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

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, bolted slip blinds and chains.

Zero Mechanical State: The mechanical potential energy of all portions of the equipment or machine is set so that the opening of pipes, tubes, hoses, or actuation of any valve, lever or button, will not produce a movement which could cause injury.
**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/equipment and making adjustments 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.

**RESPONSIBILITY:**
The lockout/tagout procedure applies to all employees whose job requires servicing and/or maintenance of machines/equipment; and employees working in areas where servicing and/or maintenance are performed. All employees who use lockout/tagout procedures must be authorized by supervision. The authorization requires special lockout/tagout instructions, rules, and techniques including, but not limited to:

- intended use of the procedure;
- steps for shutting down, isolating, blocking and securing;
- steps for placement, removal and transfer of lockout/tagout devices and responsibility; and
- requirements for testing to determine and verify the effectiveness of the lockout/tagout devices

The following are responsible for implementing the lockout/tagout procedures:
The Authorized Employee and Shop Supervisor.

Facilities is responsible for the following:

- Selecting a designated person to oversee lockout/tagout procedures (Director of Facilities Resources)
- Each authorized employee is responsible for learning and following the procedures and practices under this program.
- Maintain, at no cost to employees, lockout/tagout equipment. Equipment includes, but not limited to padlocks, DANGER tags, group lockout/tagout devices, chains, wedges, adapter pins, fasteners and other necessary equipment for use each time a lockout/tagout process is performed.
- Develop written lockout/tagout policy/procedures, which incorporate the following
elements:
  - All personnel shall comply with the provision of the lockout/tagout program. Supervisors must enforce the use of personal locks/tags to ensure protection when personnel performing tasks where exposure to unexpected energization may occur.
  - The locks/tags shall be standardized throughout Facilities and the only authorized method for the lockout/tagout of energy sources. Locks and tags shall not be used for any purpose other than personal protection.
  - Individual locks/tags shall be applied and removed by each person exposed to the unexpected release of energy.
  - Where equipment is lockable, use of a lock is required by all exposed personnel.
  - Where equipment is not lockable, tagout application or special lockout/tagout procedures shall be utilized.
  - When locks are used in the lockout/tagout application, tags shall always accompany them.
  - Energy isolation devices shall be clearly labeled or identified to indicate their function unless located and arranged so their purpose is evident.
  - The use of electrical control circuitry to accomplish lockout/tagout is prohibited since it does not offer positive personnel protection.

TRAINING/RETRAINING:

Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

Each affected employee shall be instructed in the purpose and use of the energy control procedure.

All other employees who do not work in areas where lockout/tagout may be used will be provided a brief overview of the lockout/tagout program.

When tagout systems are used, employees shall also be trained in the following limitations of tags:

- Tags are essentially warning devices affixed to energy isolation devices. They do not provide the physical restraint on those devices that is provided by a lock.
- When a tag is attached to an energy isolation device, it is only to be removed by the authorized employee responsible for it, and it is ever to be bypassed or ignored.
- Tags must be legible and understandable by all employees.
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.
- Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
- Tags must be securely attached to energy isolation devices so that they cannot be inadvertently or accidentally detached during use.

Employee retraining:

- Retraining shall be provided for all authorized employees whenever there is a change in their 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.
- Additional retraining shall also be conducted whenever a periodic inspection reveals, or when the department/agency/supervisor believes that there are deviations from or
inadequacies in the employee’s knowledge or use of the energy control procedures. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

Auditing:

- Supervisors will conduct a once a year audit (Appendix A) to see that the employee has an understanding of the policy and steps to conduct a lockout tag out.

PROCEDURE:
Electrical Lockout/Tagout Procedures

1. **Simple Lockout/Tagout Procedure**

   All lockout/tagout procedures that involve only a authorized person deenergizing one set of conductors or circuit parts source for the sole purpose of performing work within the limited approach boundary electrical equipment shall be considered a simple lockout/tagout. Each worker shall be responsible for his/her own lockout/tagout.

   a. Notify employees that a lock-out and tag-out is going to be implemented.

   b. Review current diagrammatic drawings (or other equally effective means), tags, labels, and signs to identify and locate all disconnecting means to determine that power is interrupted by a physical break and not a circuit interlock. Make a list of disconnecting means to be locked (tagged) and determine task to be performed.

   c. Use protective barriers to define safe boundaries. (pages 70E-24-25)

   d. Determine the Hazardous Risk Category. (pages 70E 33-38)

   e. Use appropriate personal protective equipment. (page 70E-39-40)

   f. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, open or close valve, etc.)

   g. Test voltage meter to assure it is operating accurately on equipment to be locked or tagged out.

   h. Disconnect electrical power source and release stored energy.

   i. Check the equipment/process by the use of test instruments and/or visual inspection to verify that energy isolation has been accomplished.

   j. Apply lockout/tagout device.

   k. Install grounding equipment where required to eliminate induced or stored energy before touching them.

   l. Before electrical circuits or equipment may be reenergized appropriate tests and a visual inspection shall be conducted to verify that all grounding equipment, tools, mechanical restraints, and electrical jumpers, shorts and grounds have been removed, so that the circuit and equipment are in a condition to be safely energized. Lockout devices shall be removed only by the person who installed them. When appropriate the employees responsible for operating the machines or process shall be notified when circuits and equipment are ready to be energized.

   m. Submit completed lockout tag to supervisor at the end of shift.
2. Complex Lockout/Tagout Procedure
The Complex Lockout/Tagout Procedure is required if time extends past Authorized Employee’s shift or work is with other shops that are involved with this Lockout/Tagout. A Complex lockout/tagout plan shall be permitted when one or more of the following exists: (1) Multiple energy sources, (2) Multiple crews, (3) Multiple crafts, (4) Multiple locations, (5) Multiple employers, (6) Different disconnecting means, (7) Particular sequences, (8) A job or task that continues for more than one work period.

a. A written plan (Appendix B) is required that identifies the person in charge.
b. Responsibility is vested in a primary authorized employee for a set number of employees working under the protection of a group lockout/tagout device. The person in charge shall be held accountable for safe execution of the complex lockout/tagout.
c. The complex lockout/tagout procedure includes all requirements under Section 2 a-l.
d. Each authorized employee shall affix a personal padlock to the group lockout device.
e. The day of the complex lockout the bottom portion of the tag shall be given to the supervisor who will place it in the assigned designated area.
f. When the complex lockout/tagout is completed, the field portion of the tag is to be given to the supervisor who will then remove the bottom portion of the tag placed in the assigned designated area and submit it to the Associate Director, and the written plan will be closed.

 Stored Energy Lockout/Tagout Procedure
The lockout/tagout sequence is as follows:

Notify all affected employees that a lockout/tagout system is going to be utilized and the reason why.

If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, open or close valve, etc.).

Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in springs, elevated machine parts, rotating flywheels or fan blades, hydraulic systems, and gas, air, steam or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding down, venting, etc. If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

1. Simple Lockout/Tagout Procedure
All lockout/tagout procedures that involve only an authorized person deenergizing equipment for the sole purpose of performing work shall be considered a simple lockout/tagout. Each worker shall be responsible for his/her own lockout/tagout.

a. Review current diagrammatic drawings (or other equally effective means), tags, labels, and signs to identify and locate all disconnecting means. Make a list of disconnecting means to be locked (tagged) and determine task to be performed.

b. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open toggle switch, open or close valve, etc.)

c. Release, disconnect, close or block stored energy source.
2. Complex Lockout/Tagout Procedure

The Complex Lockout/Tagout Procedure is required if time extends past Authorized Employee’s shift or work is with other shops that are involved with this Lockout/Tagout. A complex lockout/tagout plan shall be permitted when one or more of the following exists: (1) Multiple energy sources, (2) Multiple crews, (3) Multiple crafts, (4) Multiple locations, (5) Multiple employers, (6) Different disconnecting means, (7) Particular sequences, (8) A job or task that continues for more than one work period.

a. A written plan (Appendix B) is required that identifies the person in charge.
b. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout/tagout device. The person in charge shall be held accountable for safe execution of the complex lockout/tagout.

c. The complex lockout/tagout procedure includes all requirements under Section 2a-g.

d. Each authorized employee shall affix a personal padlock to the group lockout device.
e. The day of the complex lockout the bottom portion of the tag shall be given to the supervisor who will place it in the assigned designated area.

When the complex lockout/tagout is completed, the field portion of the tag is to be given to the supervisor who will then remove the bottom portion of the tag place in the assigned designated area and submit it to the Associate Director, and the written plan will be closed.

Discipline

Violating this procedure or disconnecting a means without an installed lockout device will result in the following KSU Progressive Disciplinary Procedure to be place into effect:
Employee Name: ____________________________  Date: ________________

Employee ID number: ____________________________

**Article 110.3 (H)(2) Field Work (p. 16)**

The employee has shown the supervisor where to find the Approach Boundaries Table 130.4 (C) (a) pp. 24-25 (2012)

- [ ] Passed  [ ] Failed

The employee has shown the supervisor where to find the Hazardous Risk Category Table 130.7 (C)(15)(a) pp. 33-37 (2012)

- [ ] Passed  [ ] Failed

The employee has shown the supervisor where to find Table 130.7 (16) Protective Clothing 70E-39-40 (2012)

- [ ] Passed  [ ] Failed

The employee's electrical-rated tools were inspected.

- [ ] Passed  [ ] Failed

The employee's electrical meter was inspected.

- [ ] Passed  [ ] Failed

The employee's PPE was inspected.

- [ ] Passed  [ ] Failed

**Article 120.2 (D)(1) Lockout/Tagout (p. 19)**

The Supervisor has observed the employee on ______________ conducting a Lockout/Tagout

- [ ] Passed  [ ] Failed

Supervisor signature: ____________________________

**Article 120.2 (D)(2) Complex Lockout/Tagout (p. 19)**

The employee participated in a simulated Complex Lockout/Tagout on ______________

Auditor: ____________________________
### Complex Lock-out Tagout Form Appendix B

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