PHYSICAL PLANT OPERATING POLICY AND PROCEDURE

PP/OP 02.07 Lockout/Tagout Program

DATE: January 5, 2011

PURPOSE

This Physical Plant Operating Policy and Procedure (PP/OP) establish requirements for the lockout/tagout of machines/equipment having the potential for unexpected release of stored energy. The intent is to ensure the safety of personnel and protect equipment through the identification and proper isolation of systems, and/or components of systems, prior to any maintenance or repair.

REVIEW

This PP/OP will be reviewed in September of every year by the physical plant safety coordinator and recommendations forwarded to the managing director for physical plant.

POLICY AND PROCEDURE

1. Definitions

a. 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.

b. Authorized employee – A person who locks out and tags out machines or equipment in order 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.

c. Energized – Connected to an energy source, or containing residual or stored energy.

d. Energy isolating device – A mechanical device that physically prevents the transmission or release of energy. Examples: manually operated circuit breaker, a disconnect switch, a line valve, or a block. This device does not include a push button, selector switch, or other circuit type devices that do not have an installed provision to lockout with a lock.

e. Energy source – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
f. **Lockout** – The placement of a lockout device on any energy-isolating device, in accordance with an established procedure, that ensures the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

g. **Lockout device** – A device with the positive means to hold an energy-isolating device in the safe position and prevent the energizing of a machine or equipment. This device could be a keyed lock, blank flanges, and bolted slip blinds rated for the system. All lockout devices will be accompanied with a tagout device.

h. **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 lubricating, cleaning or un-jamming machines or equipment, and making adjustments or changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy or hazardous chemicals.

i. **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.

j. **Tagout device** – A prominent warning device such as a tag with a means of attachment that allows it to be securely fastened to an energy-isolating device in accordance with an established procedure. This device indicates that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed. Information on the tag will include the Authorized employee’s name and equipment being taken out of service.

2. **General Policy**

   Lockout/Tagout procedures will be followed by all applicable employees engaged in the maintenance of power-driven equipment; electric, air, steam transmission systems; pressurized systems of all types; hydraulic systems; and hazardous materials (acid, caustic, solvent, gasoline) distribution systems.

   When an energy-isolating device is not capable of being locked out, the red tagout only system will be used. If possible, the circuit elements, valve handles, etc., will be removed to make it as safe as possible. Each section must demonstrate the tagout program will provide a safety level equivalent to that obtained by using a lockout program.

   When an energy-isolating device is capable of being locked out, the lockout system will be used. A tag must always accompany a lock to identify the authorized employee performing the lockout and the equipment.

   When any new equipment is purchased or existing equipment is updated, the equipment will be designed in such a way that it will accommodate a locking device.
Any intentional attempt to operate any switch, valve, or other energy-isolating devise when it is locked or tagged out is grounds for severe disciplinary action up to and including termination.

Applicable sections of Physical Plant are required to establish and document procedures to cover applications of lockout/tagout in their operations. One copy of these procedures will be retained in each shop/plant and one on permanent file in the Physical Plant Safety Office.

3. Protective Materials and Hardware

Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware will be provided by the Physical Plant for isolating, securing, or blocking machines or equipment from energy sources.

Lockout devices and tagout devices will be singularly identified; will be the only device(s) used for controlling energy; will not be used for other purposes, and will meet the following requirements:

a. Durable

   (1) Lockout and tagout devices will be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

   (2) Tagout devices will be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

   (3) Tags will not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

b. Standardized

   Lockout and tagout devices will be standardized within the facility in at least one of the following criteria: color; shape; or size. Additionally in the case of tagout devices, print and format will also be standardized.

c. Substantial

   (1) Lockout devices will be substantial enough to prevent removal without the use of excessive force or unusual techniques such as with the use of bolt cutters or other metal cutting tools.
(2) Tagout devices, including their means of attachment, will be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means will 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 and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

d. **Identifiable**

(1) Lockout devices and tagout devices will indicate the identity of the employee applying the device(s).

(2) Tagout devices will warn against hazardous conditions if the machine or equipment is energized and will include a legend such as the following: DO NOT START; DO NOT OPEN; DO NOT CLOSE; DO NOT ENERGIZE; DO NOT OPERATE and will identify employee and equipment.

4. **Annual Procedure Review**

A knowledgeable employee (foreman, supervisor or superintendent) will conduct an annual review of energy control procedures to ensure they are adequate and being followed. This review will be documented to include: the identification of the machine or equipment the energy control procedure is being used on; the date of the review; and the reviewer(s) name(s) and title.

If deficiencies are identified during the annual review process, the procedure will be amended to correct all identified deficiencies.

5. **Training and Communications**

Section foremen/supervisors will provide and document training to ensure employees understand the purpose and function of the lockout/tagout program and have the knowledge and skills required for the safe application, use, and removal of energy controls.

The training will include the following:

a. Each authorized employee will receive a copy of the lockout/tagout operating policy/procedure and training in recognizing 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.

b. Each affected employee will be instructed in the purpose and use of the energy control procedure.
c. All other employees whose work operations are in or may be in an area where energy control procedures may be utilized will be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

d. When locks cannot be used and the tagout only system is used, employees will also be trained in the following limitations of tags:

   (1) Tags are essentially warning devices affixed to energy-isolating devices, and do not provide the physical restraint on those devices provided by a lock.

   (2) When a tag is attached to an energy means, it is not to be removed without authorization of the authorized person responsible for it and it is never to be bypassed, ignored, or otherwise defeated. Refer to 7.b.(3), Exception for removal process.

   (3) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are in or may be in the area in order to be effective.

   (4) Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.

   (5) Tags may evoke a false sense of security and each tag’s meaning needs to be understood as part of the overall energy program.

   (6) Tags must be securely attached to energy-isolating devices so that they cannot be inadvertently or accidentally detached during use.

e. Employee Retraining

   (1) Retraining will be provided for all authorized employees and affected employees when there is a change in their job assignments, change in machines, equipment, or processes that present a new hazard, or when there is a change in the energy control procedures.

   (2) Additional retraining will also be conducted when the annual procedure review reveals or there is some reason to believe that there are deviations from or inadequacies in the employee’s knowledge or use of the energy control procedures.

   (3) The retraining will reestablish employee proficiency and introduce new or revised control methods and procedures as necessary.
All training will be documented with employee signatures, shop/area, and training date. This record will be placed on permanent file in the safety office.

6. Application of Control

The established procedures for the application on energy control (the lockout/tagout procedures) will cover the following elements and actions and will be done in the following sequence:

a. Preparation for shutdown

Before an authorized or affected employee turns off a machine or equipment, that employee will have knowledge of the type and magnitude of the energy, hazards of the energy to be controlled, and method or means to control the energy.

b. Machine or equipment shutdown

The machine or equipment will be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be used to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

c. Machine or equipment isolation

All energy-isolating devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

d. Lockout/tagout device application

(1) Lockout and tagout devices will be affixed to each energy-isolating device by authorized employees.

(2) Where used, Tagout devices will be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the “safe” or “off” position is prohibited.

(3) Where tagout devices are used with energy-isolating devices designed with the capability of being locked, the tag attachment will be fastened at the same point at which the lock would have been attached.

(4) Where a tag cannot be affixed directly to the energy isolating device, the tag will be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
e. Stored energy

Following the application of lockout/tagout devices to energy-isolating devices, all potentially hazardous stored residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.

f. Verification of isolation

Prior to starting work on machines or equipment that have been locked out or tagged out; the authorized employee will verify that isolation and de-energization of the machine or equipment have been accomplished.

7. Release from lockout or tagout

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, procedures will be followed and action taken by the authorized employee(s) to ensure the following:

a. The machine or equipment

The work area will be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

b. Employees

(1) The work area will be checked to ensure that all employees have been safely positioned or removed.

(2) After lockout/tagout devices have been removed and before a machine or equipment is started, affected employees will be notified that the lockout/tagout device(s) have been removed.

(3) Lockout/tagout device removal.

The employee who applied the device will remove each lockout and tagout device from each energy-isolating device.

EXCEPTION: When the authorized employee who applied the lockout and tagout device is not available to remove it, that device may be removed under the direction of the section director or designated representative, provided specific procedures and training for such removal have been developed, documented, and incorporated into the section’s energy control program.
8. **Additional Requirements**

a. **Testing or positioning of machines, equipment, or components**

In situations where lockout and tagout devices must be temporarily removed from the energy-isolating device and the machine or equipment energized to test or position the machine, equipment, or component thereof, the following sequence of actions will be followed:

1. Clear the machine or equipment of tools and materials in accordance with 6. a. above.
2. Remove employees from the machine or equipment area in accordance with 6. b. (1) and (2) above.
3. Remove the lockout and tagout device in accordance with 6. b. (3) above.
4. Energize and proceed with testing or positioning.
5. After testing is complete de-energize all systems and reapply energy control measures in accordance with 6 above to continue the servicing and/or maintenance.

b. **Outside personnel (contractors)**

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this policy and procedure, the applicable Physical Plant section and the outside contractor will inform each other of their respective lockout and tagout procedures.

The applicable Physical Plant section will ensure that Physical Plant employees understand and comply with the restrictions and prohibitions of the outside contractor’s energy control program.

c. **Group Lockout and Tagout**

1. When service and/or maintenance is performed by a unit (shop or team), crew, craft, etc., they will use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout and tagout device.
2. Unit/team lockout and tagout devices will be used in accordance with the procedures required by 6 above, but not necessarily limited to the following specific requirements:
(a) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a unit/team lockout and tagout device.

(b) Provision for the authorized employee to ascertain the exposure status of individual unit/team members with regard to the lockout and tagout of the machine or equipment.

(c) When more than one crew, craft, unit/team, etc., is involved, assignment of overall job-associated lockout and tagout control responsibility to an authorized employee designed to coordinate affected work forces and ensure continuity of protection.

(d) Each authorized employee will affix a personal lockout or tagout device to the unit/team lockout device, lock box, or comparable mechanism when s/he begins work and will remove those devices when s/he stops working on the machine or equipment being serviced or maintained.

d. Shift or Personnel Changes

Specific procedures will be used during shift or personnel changes to ensure the continuity of lockout or tagout protection. This will include provisions for the orderly transfer of lockout or tagout device protection between incoming and outgoing employees to minimize exposure to hazards from the unexpected energizing or start-up of the machine or equipment, or the release of stored energy.

9. Accountability

a. The director or associate director is responsible for enforcing compliance with this PP/OP.

b. The safety coordinator will:

(1) Send out an annual notification to the directors and associate directors as a reminder to initiate training for all employees performing lockout/tagout on the published procedures; and a reminder of required annual review/verification of the actual lockout/tagout procedures themselves.

(2) Maintain training records on permanent file in the Physical Plant Safety Office.

(3) Coordinate with applicable units (shops/teams) to ensure appropriate hardware is issued according to this PP/OP.
c. Superintendents will:
   
   (1) Ensure foremen and employees are familiar with this operating procedure,
   
   (2) Ensure foremen provide in-shop training and maintain employee awareness,
   
   (3) Monitor compliance of this policy for personnel in their areas of responsibility,


d. Foremen will:
   
   (1) Familiarize employees with this operating procedure and ensure compliance,
   
   (2) Provide in-shop training and awareness to all personnel,
   
   (3) Forward all training records to the Physical Plant Safety Office for permanent file,
   
   (4) Ensure the security of locks and keys and that they will be used only for their intended purposes,
   
   (5) Maintain master key for locks in their area of responsibility.


e. Employees will:
   
   (1) Attend training sessions to become familiar with the lockout/tagout procedure,
   
   (2) Comply with the spirit and intent of lockout/tagout policy and procedures,
   
   (3) Ensure locks are used for their intended purpose and are not loaned to others,
   
   (4) Ensure equipment is properly and safely locked and tagged out during repairs,
   
   (5) Cooperate with management during the annual procedure review process by providing comments and recommendations for improving the process and/or identifying discrepancies and deviations, and
   
   (6) Report all violations of policy to immediate supervisor.
### RESPONSIBILITIES

<table>
<thead>
<tr>
<th>POSITION</th>
<th>SECTION</th>
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Approved: _______________________________
Reviewer

Approved: _______________________________
Managing Director for Physical Plant

Building Maintenance and Construction Addendum
Building Maintenance and Construction Attachment A
Engineering Services Addendum
Engineering Services Attachment A
Engineering Services Attachment B
Utilities Section Addendum
Utilities Section Attachment A
Utilities Section Attachment B
Utilities Section Attachment C
Utilities Section Attachment D
Utilities Section Attachment E