ENERGY CONTROL PROGRAM (LOCKOUT/TAGOUT)

1.0 Policy

1.1 To protect employees from unexpected energizing, machine start-up or release of stored energy while performing servicing or maintenance on machinery or equipment at the College of Staten Island of the City University of New York.

2.0 Purpose

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

2.2 Lockout and tagout is the preferred method of isolating machines and equipment from energy sources. It is used at the College for any machines or piece of equipment that is capable of being locked out.

2.3 Following OSHA 1910.147, whenever new equipment or machines are installed, or when major replacement, repair, or renovation or modification is done to existing equipment or machines, energy isolating devices for such equipment or machines shall be designed to accept a lockout device.

3.0 Application

3.1 This procedure applies to the control of energy during the servicing and/or maintenance of machines and equipment at the College, where an employee is required to remove or bypass a guard or other safety device, or is required to place any part of his or her body into an area of machines or piece of equipment or in an associated danger zone such that injury could occur during unexpected energizing, start-up release of stored energy.
3.2 It does not apply to work where the person performing service or maintenance controls unexpected energizing or start-up by unplugging connected electrical equipment and maintaining exclusive control of the plug.

3.3 It also does not apply to hot tap operations involving transmission and distribution systems for substances such as gas, steam, water, or petroleum products when they are performed on pressurized pipelines, provided that:
   3.3.1 continuity of services is essential;
   3.3.2 shutdown of the system is impractical, and
   3.3.3 standard procedures are followed, and special equipment is used to provide proven effective employee protection.

4.0 Equipment and Energy Sources Involved

4.1 Generally, types of equipment at the College which are covered under the meaning of this Standard include the following:

   4.1.1 boilers (thermal)
   4.1.2 pumps (electrical, mechanical, chemical, thermal)
   4.1.3 fans (electrical, mechanical)
   4.1.4 compressors (electrical, mechanical)
   4.1.5 furnaces (thermal)
   4.1.6 heaters (electrical, thermal)
   4.1.7 air conditioning units (electrical, mechanical)
   4.1.8 elevators (mechanical, electrical)

4.2 Except for elevators, all pieces of equipment may be serviced, maintained and repaired by College personnel. Elevators are serviced, maintained, and repaired solely by outside contractors.

5.0 Responsibility

5.1 Engineering and maintenance personnel are instructed in the safety significance of the lockout (or tagout) procedures. Each new or transferred affected employee shall be instructed on the purpose and use of the lockout or tagout procedures.

5.2 It is the responsibility of each authorized person performing lockout/tagout procedures to inform the Chief Engineer of the initiation, continuation, and termination of lockout/tagout. The Chief Engineer may require that this
information is given in written form. It should be noted that equipment may at times have to be kept locked out for several days while awaiting the arrival of needed parts.

5.3 Information will be kept in the Chief Engineer’s office which lists the type and location of machines and equipment, types and magnitudes of energy hazards, types and locations of energy isolating devices, types of stored energy and methods used to dissipate or restrain it, methods used to isolate energy sources, and methods used to assure disconnection. The Chief Engineer will keep records of lockout/tagout procedures used.

5.4 A Lockout/Tagout Center, with appropriate locks, hasps, tags, ties, chains, etc., along with a copy of this program and the OSHA Standard, will be kept in the Engineering Office or other place or places deemed appropriate by the Chief Engineer.

6.0 Preparation for Lockout or Tagout

6.1 Make a survey to locate and identify all isolating devices to be certain which switch(es), valve(s), or other energy isolating devices apply to the equipment to be locked out or tagged. More than one energy source (electrical, mechanical, hydraulic, etc.) may be involved.

7.0 Sequence of Lockout or Tagout System Procedure

7.1 Notify all affected employees that a lockout or tagout system is going to be utilized and the reason for such a system. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards involved.

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

7.3 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 members, fly wheels, hydraulic systems, etc.) must be dissipated or restrained by effective methods such as re-positioning, blocking, bleeding down, etc.
7.4 Lock out and/or tag out the energy isolating devices with assigned individual lock and/or tags. A locking device is preferable, and must be used unless an energy isolating device is not capable of being locked out. If a tagout system is used, additional protective measures must be considered, such as blocking of a controlling switch, opening of an extra disconnecting device, or removal of a valve handle.

7.5 After assuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. CAUTION: RETURN CONTROLS TO THE “OFF” POSITION AFTER THE TEST.

7.6 Assure that the equipment is electrically de-energized by using a voltmeter to test to ground each incoming electrical line to the piece of equipment. Dissipate stored energy in pipe lines by bleeding off residual steam or compressed air.

7.7 The equipment is now locked out or tagged out, and is ready for servicing or maintenance.

8.0 Restoring Machines or Equipment to Normal Operations

8.1 After the servicing and/or maintenance is complete and the equipment is ready for normal use, check the area around the machine or equipment to assure that no one is exposed.

8.2 After all tools have been removed from the machine or equipment, guards have been re-installed, and employees are in the clear, remove all lockout and tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

8.3 Re-start the machine using normal operating controls.

9.0 Procedure Involving More Than One Person

9.1 In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lock or tag on the energy isolating device. When an energy isolating device cannot accept multiple locks or tags, a hasp or scissors may be used which can accept multiple
locks. Or, the key to a single lock may be placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee will then use his own lock to secure the box or cabinet. As each person no longer needs to maintain his or lockout protection, that person will remove his/her lock from the hasp, cabinet or box.

10.0 Shift or Personnel Changes

10.1 When lockout or tagout must remain in place during changes of personnel or during shift changes, provision must be made to assure continuity of tagout or lockout to minimize exposure to hazards from unexpected energizing, start-up, or release of stored energy. The preferred method is for the incoming authorized person to add his/her lock or tag and the outgoing authorized person to remove his/her lock or tag.

11.0 Basic Rules for Using Lockout or Tagout System Procedures

11.1 All equipment will be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury or death. Never attempt to operate any switch, valve, or other energy isolating device that is locked or tagged out.

11.2 It is the responsibility of the employee servicing or repairing the machine or equipment to follow the above procedures to protect him/herself.

11.3 It is the responsibility of fellow workers to respect locks and tags, and not to try to operate locked or tagged machinery or equipment.

12.0 Lockout and Tagout Devices

12.1 Lockout and tagout devices shall be durable, standardized, substantial, and identifiable.

12.2 Durable – capable of withstanding the environment to which they are exposed for the maximum period of use.

12.3 Standardized – by at least one of the following formats with a facility: color, shape, size; and print and format for tags.
12.4 Substantial – for lockout devices, strong enough to prevent removal without the use of excessive force or unusual technique, such as bolt cutters. For tagout devices and attachments, self-locking and non-reusable with a minimum unlocking strength of not less than 50 pounds.

13.0 Periodic Inspection

13.1 At least annually, the chief engineer or his delegated representative shall conduct an inspection of the energy control procedure for each machine or piece of equipment. This inspection is designed to correct any deviations or inadequacies observed. The inspection will include a review, between the inspector and the person authorized to perform the lockout or tagout, of that person’s activities and responsibilities under the energy control procedures. When the chief engineer is the authorized person, inspection shall be done by another authorized employee. Results of the inspection and review will be documented, and records kept in the chief engineer’s office.

14.0 Training and Communication

14.1 Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. All affected employees or those who work in an area where energy control procedures may be utilized will receive training in the purpose and use of the energy control procedure. Additional training will be required whenever job assignments are changed; whenever new equipment or processes with new hazards are introduced; and whenever there is reason to believe that there are inadequacies in employee understanding, of procedures or implementation of procedures.

15.0 Training will be documented and records kept

15.1 When tagout systems are used, training will emphasize the following points:

15.1.1 tags are essentially warning devices, not control devices;

15.1.2 tags may not be removed without authorization of the authorized person who placed the tag, and may not be ignored, bypassed, etc.;
15.1.3 tags must be legible and understandable by all authorized and affected employees;

15.1.4 tags and their means of attachment must withstand the workplace environment in which they are placed;

15.1.5 tags may evoke a false sense of security, and their meaning and limitations must be understood.

15.1.6 tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

16.0 Definitions

16.1 Affected employee: An employee whose job requires him/her to operate a machine or equipment on which service or maintenance is 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.

16.2 Authorized employee: A person who locks or implements a tagout system on a machine or piece of equipment to perform the servicing or maintenance on that machine or piece of equipment. An authorized employee and an affected employee may be the same person.

16.3 Capable of being locked out: An energy isolating device is considered to be capable of being locked out either if it is designed with a hasp or other integral part to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it.

16.4 Energized: Connected to an energy source or containing residual or stored energy.

16.5 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 slide gauge; a slip blind; a line valve; a block; and any similar device used to block or isolate energy. The term does not include a push button, selector switch, or any other control circuit type devices.
16.6 **Energy source.** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

16.7 **Hot tap.** A procedure used in the repair, maintenance and servicing 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 pipelines without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

16.8 **Lockout:** The placement of a locking device on an energy isolating device, in accordance with an established procedure, assuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

16.9 **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.

16.10 **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 may not be operated until the tagout device is removed.

16.11 **Servicing and/or maintenance:** Workplace activities such as construction, 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 unexpected energizing or startup of the equipment or release of hazardous energy.

16.12 **Tagout:** The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the equipment being controlled may not be operated until the tagout device is removed.
# LOCKOUT/ TAGOUT LOG

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Equipment Name/Number</th>
<th>Lockout/Tagout Log</th>
<th>Lockout date</th>
<th>Reason</th>
<th>Remove date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17.0 USE OF TAGOUT/LOCKOUT LOG

17.1 When any equipment or valves throughout the campus must be secured for maintenance, repair, or due to failure, tag and, if necessary, lockout the units at the motor controller knife switch in the following manner:

17.1.1 Call Central Plant Watch Engineer and get a tag control number (upper left corner of tag) and identify equipment to be tagged out.

17.1.2 Fill tag out completely and return lower portion to the Watch Engineer to place in log until the tagout is cleared.

17.1.3 Sign the log.

17.1.4 Watch Engineer is to issue the control number sequentially and write in all information onto the log and sign.

17.1.5 When the equipment is again safe to operate, the Watch Engineer is to reissue the lower portion of the tag to the individual clearing the tagout. The tagout tag is removed and both the tagout tag and lower portion of tag are then discarded.

17.1.6 After the equipment is returned to normal operation, the individual performing the clearance will sign his name into the log. The Watch Engineer will sign his name after all the above is completed.