LOCKOUT/TAGOUT POLICY
SECTION OF UTILITIES
ADDENDUM

PURPOSE

This addendum to the Operations Division Operating Policy/Procedure 02.07 (OD/OP) establishes requirements for the System/Equipment Out of Service Identification, and Tag and Lock Out in the Section of Utilities. The intent of this addendum is to ensure the safety of personnel and plant equipment through identification and proper isolation of systems and/or components prior to performing maintenance and to satisfy requirements as defined in Occupational Safety and Health Act Regulation 1910.147 “The Control of Hazardous Energy (Lockout/Tagout).” (See OD/OP 02.07 for reference to this Act.)

It is imperative that a clear distinction is maintained between personnel and equipment safety. For system isolation, when no personnel hazard exists, the sole use of tags is allowed. **IN ALL CASES where personnel safety is at risk, a lock(s) shall be used in conjunction with the tags as specified below.**

REVIEW

This addendum will be reviewed in September of each year by the Operations Superintendent and recommendations forwarded to the **Director for Utilities.**

POLICY AND PROCEDURE

1. **Definitions**

   The following definitions are applicable to this procedure:

   a. **Blank Flange**: A flange used to blank-off a line. It must be manufactured and stamped to American Society of Mechanical Engineers (ASME) specifications suitable for its intended use and be fitted with a suitable drain valve.

   b. **Caution Tag**: A tag, yellow in color, placed on equipment to give special operating instructions or warning of restricted/reduced capabilities. (Attachment A)

   c. **Confined/Body Entry Space**: A space designated as confined space in accordance with OD/OP 08.10 or any area where a person will insert any or all parts of their body and be exposed to traumatic injury, i.e., cutting, grinding, tearing, crushing, amputation, asphyxiation, etc.

   d. **Contractors/External Workers**: Any person performing work in Utilities spaces who is not a regular employee of the Section of Utilities. This includes Operations Division employees.

   OD/OP 02.07
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e. **Danger Tag**: A tag, red in color, placed on equipment to prevent inadvertent operation. (Attachment B)

f. **Drain Valve**: A valve located in system specifically to relieve pressure and drain operating fluid. For the purposes of this OP, a drain valve must drain to atmosphere in a manner that its proper operation can be visually verified.

g. **Electrical Shock Hazard**: All electrical circuits (low voltage circuits under direct control of instrumentation specialist are exempted from this requirement).

h. **E.T.R.**: Estimated time of repair and return to service. An E.T.R. will consist of the date and time repairs to a system are to be completed.

i. **Equipment**: Any piece of a system, component, or sub-component that requires tagging out.

j. **Equipment Out of Service Sheet**: The document that controls a tag or series of tags and/or lock(s) required for a system tag out. (Attachment C)

k. **Foreman**: Duly appointed Maintenance Foreman, Operations Foreman, Instrumentation Foreman, or person performing the duties of Foreman.

l. **Initiator**: Authorized employee initiating the tagging/locking out of a system, component, or sub-component also responsible for preparing paperwork and obtaining proper signatures.

m. **Isolation**: The blocking-in of a system, component, or sub-component by achieving two-valve protection, in order to allow work to safely proceed.

n. **Lead Operator**: The designated Lead Operator who has shift responsibility for the plant at that specific time or a substitute who is Lead Operator qualified and authorized to do so by the duty Lead Operator. Lead Operator will also be responsible for verifying the position of all tagged devices and verifying the appropriately numbered lock on each of the devices. The substitute Lead Operator may fill the duties of the shift Lead Operator for the purpose of verifying lock/tag placement.

o. **Location**: Specific identification of the location of each tag/lock.

p. **Lock**: A keyed lock, red in color, used in conjunction with red tag(s) to protect personnel.

q. **Lock Box**: A secure box located at each facility (CHACPs #1 and #2, ITC, and Museum) that will contain keys for plant locks that have been placed in accordance with this OP. The lock box will be located in the respective control rooms and...
only the Lead Operator will have access to the box(es).

r. **Tagout Lock Box:** Large locking red cabinet mounted on the wall of each control room, used to store locks that are not in use and keys to plant locks that are in use on Site Lock Boxes. The Tagout Lock Box should remain locked when unattended and access will be the responsibility of the Lead Operator.

s. **Multiple Lock device:** A device specifically manufactured so multiple locks may be attached to a single point. Example: A loop through an electrical breaker lock that has ports for multiple locks preventing operation of the breaker until ALL locks have been removed.

t. **Pancake Flange:** A blind flange designed to be inserted between two (2) flanges to provide positive isolation. It must be manufactured and stamped to American Society of Mechanical Engineers (ASME) specifications suitable for its intended use.

u. **Personal Locks:** Safety lock(s), green in color, issued to every Utilities employee. Each personal lock shall be marked with the employee’s name to indicate the owner. These locks shall be used solely in accordance with this safety policy to lock out systems or applicable Site Lock Boxes.

v. **Plant Locks:** Safety locks(s), red in color and sequentially numbered, used when a system requires multiple locks.

w. **Position:** The condition designated by the tag.
   
   **Example:** Shut, open, tripped, off, etc.

x. **PM:** Preventive Maintenance task performed using the steps contained in the Preventive Maintenance Work Order.

y. **Superintendent:** Person performing duties of superintendent (Operations, Maintenance) or in their absence, the Director for Utilities, Utilities Manager or Chemistry Manager.

z. **Site Lock Box(es):** An individual lock box, red in color, assigned to each Equipment Out of Service Sheet. These box(es) shall be equipped with sufficient ports to allow every necessary employee or visitor to place their personal lock and allow for a plant lock in such a manner to prevent access to the plant lock keys used to isolate a particular system, until all personal locks and the plant lock have been removed. These box(es) will be permanently mounted at each major piece of equipment in a highly visible area and several portable site box(es) will be available for use on equipment not having a permanent site box. The portable box(es) will be placed in a highly visible location in close proximity to the work site.
aa. **System**: A part of the plant operating system. Example: #1 Chiller, 400/600 pounds per square inch (psi) steam, city water to towers, etc. *(For the purpose of this instruction, it will mean the highest level of plant capability lost due to the placing of a tag).*

bb. **Safe System**: A system that has been properly isolated and all sources of energy verified as having been isolated and relieved via all available indications. It will have been properly tested and permitted for entry to confined spaces. This shall include gages, vents, drains, and electrical test equipment as applicable. **IMPORTANT**: Never assume a system is safe at any time and always hold all instruments/indications as suspect. If in doubt, back off!

c. **Lock/Tag Number**: A number that specifically identifies one tag or lock and its location, and refers back to the appropriate Equipment Out of Service Sheet. Example: Tag/Lock Number 2010-3L or T, (2) is the year, (010) is the sheet number, (3T) is the tag number and (3L) is the lock number.

d. **Tag Series Number**: A number that specifically identifies each Equipment Out of Service Sheet.

ee. **Telltale Drain**: A drain or vent valve specifically installed to allow continuous monitoring of isolated system for leakage or pressure buildup; or any other drain or valve which by deliberate alignment may be caused to serve the function of a telltale. An effective telltale drain must be located in a highly visible, easily accessed area close to the actual work site to allow continuous monitoring.

ff. **Two-Valve Protection**: Requires two (2) separate points of isolation (energy isolating device(s)) for each flow path.

g. **Vent Valve**: A valve located in a system specifically to vent system pressure. For the purposes of this OP, a vent valve must vent to atmosphere in a manner that its proper operation can be visually verified.

hh. **Visitor Sign In Sheet**: An information sheet, (Attachment D), to be properly executed by every contractor/visitor (individuals not assigned to that particular plant), that will be exposed to the requirements of this OP.

ii. **Visitor’s Lock(s)**: Visitor lock(s), (usually) blue in color, with a single key issued by the lead operator or senior Utilities person at Museum or ITC to contractor(s) or visitor(s) (individuals not assigned to that particular plant), required to conduct necessary business in the plant that do not have their own safety lock(s). The lock(s) shall be issued personally to each required individual.
2. **General Policy**

It will be the policy of the Section of Utilities that an Equipment Out of Service sheet be prepared and properly approved with system valves, drains, vents, telltale drains, breakers, etc., in the designated position with two-valve protection when possible, appropriate tags and/or locks affixed, and a safe system determined prior to the commencement of work.

a. Danger tags will be used and IN ALL INSTANCES where personnel safety is at risk:

   (1) All steam systems regardless of pressure or temperature.

   (2) All electrical circuits (Low voltage control circuits 120v or less under direct control of instrumentation specialist are exempted from this requirement).

   (3) All rotating, reciprocating, and/or moving machinery.

   (4) All water systems greater than 90°F, 60 psi, or directly affecting operational capability.

   (5) All pressure piping including compressed air with a pressure greater than 25 psi or size greater than 3/8-inch tubing.

   (6) Anytime the changes in valve or switch positions could in any possible way cause harm to personnel or damage equipment.

   (7) IAW PP/OP 08.10, prior to entering a confined space. **DU is required to sign all confined space entry tagouts.**

   (8) All Acid and Bleach Systems

   (9) If in doubt, lock and tag it out!!

b. Keyed lock(s) will be placed in conjunction with at least one (1) red tag in:

   (1) Every path of energy placing personnel at risk or to a confined space/body entry space. This will normally be the tag closest to the work sight or confined space/body entry space. The key(s) to the lock(s) will then be placed in the appropriate site lock box on which the Lead Operator will place a numbered plant lock. The key to the lock box key is to be returned to the Tagout Lock Box and becomes the responsibility of the Lead Operator. In cases where no more than one lock is required to lock out a system the individual will place their personal lock on the appropriate device.
(2) All personnel will place their personal lock on the site lock box before commencing work upon or entering into a tagged/locked out system or space.

(3) All electrical circuits (low voltage control circuits under direct control of instrumentation specialist are exempted from this requirement).

c. Caution tags will be used to annotate abnormalities, special operating procedures, reduced capabilities, etc. in order to bring special attention to the equipment, valve, breaker, etc. to be used.

d. Lock/Tag placement will be in an obvious, visible location in a manner that cannot be overlooked. 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 (fifty) pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant, nylon cable tie. If necessary to protect against environment, the tags will be placed in a vinyl protector to prevent damage to the tags. Individual locks will be placed on the respective site lock box. In cases where no more than one lock is required to lock out a system, the individual will place their personal lock on the appropriate device. In addition, all means available such as valve locks and locking out of breakers should be used. Extreme care shall be exercised to ensure a tag is placed on the correct component and that the component is in the correct position as specified.

e. Single-Valve Protection: Occasionally it may be necessary to work on a system without achieving two-valve protection. In ALL such instances, specific prior approval from the Director for Utilities (DU) is required. In this situation “telltale” drains or vents are critical to safety. Do not rely solely on gauges or instrumentation. In the absence of the DU, the Operations or Maintenance Superintendent, Utilities Manager or Chemistry Manager may, at their discretion, approve single-valve protection by phone or preferred by initialing the Equipment Out of Service Sheet that all factors have been considered. This may be delegated no further.

f. Blank flanges, drains, vents, and telltale drains: American Society of Mechanical Engineers (ASME) approved blank and pancake flanges may be used to achieve positive isolation and/or two-valve protection. In all instances the use of vents, drains, and telltale drains shall be maximized. Under no circumstance shall a blank or pancake flange be installed on a system under criteria listed in Paragraph 2 (a) above without a vent or drain located to relieve pressure prior to its removal.

g. In occasional instances, a system may be properly isolated by use of only an employee’s personal lock, or multiple lock devices such as manufactured for this specific use on electrical breakers, etc., which negates the requirement for a site lock box. In all such instances, proper completion of required Equipment Out of
Service Sheet in accordance with this OP is required.

(1) For the below listed routine PM’s, the Lead Operator is authorized to place his/her personal lock in the location listed for each individual PM prior to performing the PM and remove his/her personal lock, once the PM is completed. The PM may be performed by the Assistant Operator with the use of his/hers personnel lock, but the Lead Operator will use his/her lock to properly isolate the system. The Lead Operator will note on the PM Work Order sheet the date and time, as well as sign for the placing and removing of his/her personal lock.

(a) Chiller Shaft Rotation PM – Lock to be placed on Chiller Steam Isolation Valve

(b) Chiller Oil Purifier Cleaning PM – Lock to be placed on local purifier disconnect.

(c) Back Pressure Turbine Purifier Cleaning PM – Lock to be placed on local purifier disconnect.

h. Upon completion of work on that system, or at the end of each shift or workday ALL personnel, including contractors, who have placed a lock on the site lock box will remove their personal or visitor’s lock. Failure to remove personal locks at the end of each shift or workday will result in progressive disciplinary actions.

i. Audit:

(1) Each Sunday, in accordance with standing orders, the Lead Operator will conduct an audit of all Equipment Out of Service Sheet to ensure they are still valid and that tag(s) and/or lock(s) are firmly attached to their respective locations. Results of this audit will be reported in writing to the Superintendent via the Foreman and entered in the Operator's Log. In addition, tag(s) and/or lock(s) posted for over 30 days will be listed.

(2) Tagout audits at the Museum and ITC shall be performed as above each Friday by the senior operator. Results of this tagout audit will be forwarded in writing to the DU through the Operations Superintendent. In addition, all tags and/or locks posted over 30 days will be listed.

j. Training:

No employee shall prepare, initiate, or verify the placement of Locks, Danger, or Caution tags until proper training and check out and a final qualification signature (verification) is received through the Personnel Qualification System (PQS). Refer to the Tagout Policy in the PQS User’s Guide – Section 1 for more information on specific training required.
3. Procedure for Central Heating and Cooling Plants

a. THE EMPLOYEE WHO DETERMINES THAT A SYSTEM REQUIRES TAGGING OUT WILL BE THE INITIATOR OF ALL PAPERWORK AND WILL:

   (1) Study the system to determine and ensure how to isolate the required section, always attempting to attain "two-valve protection" and determine if a lock(s) is required.

   (2) Fill out and sign the Equipment Out of Service Sheet (Attachment C) and appropriate tags: either Danger (Attachment B) or Caution (Attachment A).

   (3) The Lead Operator will review and sign the sheet after verifying that the tag(s) and lock(s) are adequate for the work to be performed and will not interfere with the operation of the plant.

   (4) Have the Instrumentation Technician, Maintenance Foreman, and Operations / Plant Foreman (a superintendent may sign both in the absence of both of the foremen), respectively, sign the sheet after verifying all information. Obtain sufficient plant locks from the lead operator, if required, to place a lock on each energy source being isolated.

     - Instrumentation personnel are only required to sign if the hanging of the tag involves controls system components, electrical or electronic isolations.

     - The Director for Utilities will sign for the final approval on tag outs dealing with confined spaces.

   (5) After obtaining all required signatures, the initiator will position the valve, breakers, etc. in the proper tag out position, place the tag(s) and lock(s) on the appropriate the valve, breakers, etc., and ensure they are securely attached.

   (6) Return the Equipment Out of Service Sheet to the Lead Operator who will verify the position of the valves, breakers, etc., as well as the placement of appropriate tags and lock(s) and sign the verification at the bottom of the Equipment Out of Service Sheet. The original Equipment Out of Service Sheet will be filed with the Lead Operator.

   (7) Only after ensuring a Safe System, the Lead Operator has signed the verification at the bottom of the Equipment Out of Service Sheet, and after proper placement of the employee’s personal lock may work commence.

   **WARNING:** Every available means shall be used to ensure all sources of energy have been isolated/secured and stored energy released. It is incumbent
upon every individual to never **ASSUME** safe system has been achieved.

b. **To return a system to service**

   (1) Initiator obtains the original Equipment Out of Service Sheet from the Lead Operator along with signatures from:

      (a) Operations/Plant Foreman or Superintendent

      (b) Maintenance Foreman or Superintendent

      (c) Lead Operator

      (d) Instrumentation Technician

   (2) Remove all tags and locks sign the sheet stating that all tags and locks have been removed, and return the sheet and tags to the Lead Operator.

   (3) The Lead Operator will return all valves, breakers, etc. to the proper position and enter on the Equipment Out of Service Sheet in the Final Position column, as well as verify the removal of all tags and locks. The Lead Operator will then sign the Equipment Out of Service Sheet, signifying this verification.

   (4) The Lead Operator will return the Equipment Out of Service Sheet and tags to the Foreman, as well as return the locks to the Tagout Lock Box.

   (5) After verification that all tags are present and signatures obtained, the Foreman will destroy all tags and route the original Equipment Out of Service Sheet to the Operations Superintendent, then Director for Utilities for review. It will then be returned to the respective Operations/Plant Foreman for file.

c. **Safety**

The objective of this instruction is for safety of plant personnel and equipment, no violation of this procedure or tagged/locked out system, component, valve, or breaker will be tolerated. **All violations will result in disciplinary action, up to and including immediate dismissal.**

d. **Contractors/visitors:** Contractors /visitors in the plants who require protection in accordance with this OP will be required to complete a Contractor/Visitor Information Sheet (Attachment E) prior to commencement of work. If they do not have their own personal locks, the Lead Operator will issue a plant lock with key for their personal use. For large projects, a training session with the contractor’s assigned workers will be held prior to commencement of work and the contractor required for providing personal locks for his employees.
e. Exception: Permission to Override

In the event of an emergency or the request to test equipment after maintenance, specific prior permission must be obtained from the Superintendent to operate any equipment without proper removal of the tags. In all such instances verification that all personal locks have been removed must be made before proceeding. The Utilities Manager, Chemistry Manager, Director for Utilities, or other utilities Superintendent may grant permission in the Superintendent’s absence. This authority can be delegated no further. Once the test is complete or at the end of the work day, the tags and devices shall be returned to the tagged position. Override permission must be obtained each work day, no valves or other devices are to be left in the override position past the end of the work day. Any device that is to be left overridden past the end of the work day, requires special permission from the Director for Utilities or a Superintendent in his absence.

(1) Procedure for override

(a) Person overriding a tagged piece of equipment removes their personal lock (after ensuring all other personal locks are removed) from the lockbox and places a tag with the information: “Overridden by first / last name” on the lockbox. That person will also place a generic tag, which reads “Overridden” on the device he is overriding to do the testing along with the existing red tag. This “Overridden” tag will be left in place until the device is placed back into the proper “tagged” position or the tagout is cleared. Tags can either be pre-made tags or a blank tag with the appropriate information written on it in ink.

Note: Emergency Clearance of Red Tags/Locks

Safety of personnel and the plant must remain number one priority. However, the decision to emergency clear a red tag based upon judgment and good engineering practices may be delegated to the Lead Operator. It is imperative that the distinction between override and removal through the process of emergency clearing tags/locks remains distinct in this situation. When possible the Lead Operator should make every effort to contact the Foreman prior to emergency clearing of tags.

f. Abandoned Locks: All employees and contractors/visitors must exercise extreme diligence in maintaining accountability for their personal locks. In the event a personal lock key is lost or a lock remains unaccounted for, ONLY the DU or person designated as acting in his absence may initiate action to cause the lock to be removed and only after thorough personal examination of the work site and all circumstances and consequences.
4. **Procedure for the ITC**

   a. **THE EMPLOYEE WHO DETERMINES THAT A SYSTEM REQUIRES TAGGING OUT WILL BE THE INITIATOR OF ALL PAPERWORK AND WILL:**

      **NOTE:** Due to smaller size of this facility, site lock boxes may not be used and sufficient personal locks will be issued to each individual to safely accomplish their assigned task.

      (1) Study the system to determine and ensure how to isolate the required section, always attempting to attain "two-valve protection".

      (2) Fill out and sign the Equipment Out of Service Sheet (Attachment C) and appropriate tags: either Danger (Attachment B) or Caution (Attachment A).

         (a) Obtain verbal or electronic approval of a Superintendent and Foreman/Acting Foreman verifying all information and tag/lock placement and so note on the sheet.

         (b) Properly attach the tags/locks

         (c) Verify safe system has been achieved.

      (3) Return Equipment Out of Service Sheet to designated clipboard in respective office.

      (4) Work may commence.

   b. **To return a system to service**

      (1) Initiator obtains the original Equipment Out of Service Sheet from clipboard.

      (2) Initiator will have the Superintendent or lead person verbally or electronically sign off, then get final instructions for start-up of tagged out system.

      (3) Initiator will remove all tags/locks and prepare the system for operation as instructed by the Superintendent or leader.

      (4) Initiator will bring the system back on-line as directed by the Superintendent or leader.

      (5) After verification that all tags are present and signatures obtained, the Foreman will destroy all tags and route the Equipment Out of Service Sheet to the Maintenance Superintendent and Director for Utilities for review. It will then
c. **Safety**

The objective of this instruction is for safety of plant personnel and equipment, no violation of this procedure or tagged/locked out system, component, valve, or breaker will be tolerated. **All violations will result in disciplinary action, up to and including immediate dismissal.**

d. **Exception: Permission to Override**

In the event of an emergency or the request to test equipment after maintenance, specific prior permission must be obtained from a superintendent to operate any equipment without proper removal of the tags. The Utilities Manager, Chemistry Manager, Director for Utilities, or other utilities Superintendent may grant permission in the Superintendent's absence. This authority can be delegated no further. Once the test is complete or at the end of the work day, the tags and devices shall be returned to the tagged position. Override permission must be obtained each work day, no valves or other devices are to be left in the override position past the end of the work day. Any device that is to be left overridden past the end of the work day requires special permission from the Director for Utilities or a Superintendent in his absence.

5. **Procedure for Museum**

a. **THE EMPLOYEE WHO DETERMINES THAT A SYSTEM REQUIRES TAGGING OUT WILL BE THE INITIATOR OF ALL PAPERWORK AND WILL:**

**NOTE:** Due to size of this facility, site lock boxes may not be used; sufficient personal locks will be issued to each individual to safely accomplish their assigned mission.

(1) Study the system to determine and ensure how to isolate the required section, always attempting to attain "two valve protections".

(2) Fill out and sign the Equipment Out of Service Sheet (Attachment C) and appropriate tags: either Danger (Attachment B) or Caution (Attachment A).

(3) Obtain verbal or electronic approval from the Foreman or Superintendent, attach appropriate tags and locks.

(4) Verify that Safe System has been achieved.
(5) Return Equipment Out of Service Sheet to designated clipboard in Museum office.

(6) Work may commence.

b. To return a system to service

(1) Initiator obtains the original Equipment Out of Service Sheet from office clipboard.

(2) Initiator will verbally or electronically obtain permission and final instructions for start-up of tagged out system.

(3) Initiator will remove all tags/locks and prepare the system for operation as instructed.

(4) Initiator will bring system back on-line, as needed, and instructed by senior signers on Equipment Out of Service Sheet.

(5) After verification that all tags are present and signatures obtained and locks removed, the Foreman will destroy all tags and route Equipment Out of Service Sheet to the Maintenance Foreman, Maintenance Superintendent and Director for Utilities for review. It will then be returned to Museum office for file.

c. Safety

The objective of this instruction is for safety of plant personnel and equipment, no violation of this procedure or tagged out system, component, valve, or breaker will be tolerated. All violations will result in disciplinary action, up to and including immediate dismissal.

d. Exception: Permission to Override

In the event of an emergency or the request to test equipment after maintenance, specific prior permission must be obtained from a Superintendent to operate any equipment without proper removal of the tags. The Utilities Manager, Chemistry Manager, Director for Utilities, or other utilities Superintendent may grant permission in the Superintendent's absence. This authority can be delegated no further. Once the test is complete or at the end of the work day, the tags and devices shall be returned to the tagged position. Override permission must be obtained each work day, no valves or other devices are to be left in the override position past the end of the work day. Any device that is to be left overridden past the end of the work day requires special permission from the Director for Utilities or a Superintendent in his absence.
# RESPONSIBILITIES

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<td>Operations Superintendent</td>
<td>Review</td>
<td>September</td>
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**APPROVED:**

```plaintext
gary.moore@ttu.edu
Digitally signed by
gary.moore@ttu.edu
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Date: 2013.10.07 08:39:07 -05'00'
```

**Reviewer**

```plaintext
Dale Townsley
Digitally signed by Dale Townsley
DN: cn=Dale Townsley,c=US
o=Physical Plant
ou=Utilities,d=ttu.edu
Date: 2013.10.07 14:13:25 -05'00'
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**APPROVED:**

Director for Utilities