

**PROGRAM: Control of Hazardous Energy (LOCKOUT)**

**Chapter 5**

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**1. Purpose**

This document establishes the Lockout Program for Tidewater Community College (TCC) and provides guidance and instruction to ensure before any employee performs servicing and/or maintenance on machinery or equipment, where the unexpected energization, start-up or release of any type of energy could occur and cause injury, the machinery or equipment will be rendered inoperable by being locked out and/or tagged out. This program establishes minimum performance requirements for the control of hazardous energy.

**2. Scope**

The provisions of this program shall apply to all employees at each TCC campus and related facilities and operations. As used in this program, the terms “personnel” and “employee” include students.

**3. Responsibilities**

Each Facilities Manager, Supervisor and/or their designee is responsible for conducting a hazard assessment of their area of control to determine whether the lockout/tagout program applies to the activities and/or equipment in their area. Facilities Management and Services Department on each campus is responsible for developing and implementing lockout procedures as required by OSHA/VOSH 29 CFR 1910.147. Employees are responsible to observe safety practices contained in the Lockout/tagout Program and report unsafe conditions to their supervisor. Only authorized employees may apply lockout procedures.

**It is TCC’s policy to use only the approved lock out methods described in this plan. The Facilities Maintenance & Services Department does not allow the use of any tags to solely render any machinery or equipment safe for service or maintenance. A mechanical locking system must be used. If at any time an employee or contractor finds that any machinery or equipment on the campus cannot be for whatever reason, made safe by locking it out according to the procedures within this program, it is their responsibility to notify Facilities Maintenance supervisor or manager.**

**4. Definitions**

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

**Authorized employee.** A person who locks 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 covered under this section.

**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.

**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.

**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 and bolted slip blinds.

**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 un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the *unexpected* energizing 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.

## **5. Lockout Procedures**

These procedures establish the minimum requirements for the lockout of energy isolating devices. Specific procedures for the control of hazardous energy sources must be developed for any equipment or machinery before any maintenance or servicing is performed. These specific procedures are the responsibility of each Facilities Management and Services Department on each campus. Machines and equipment shall be evaluated using Appendix D – The Energy Source Determination Survey/Checklist. The procedures developed shall be documented in Appendices E-F. Any employees who could be exposed to hazardous energy sources shall be instructed in the safety significance of the lockout procedure.

Employees authorized to perform lockout shall receive training commensurate with their responsibilities and as per the OSHA requirements.

Appendix A is a sample listing of job titles of employees authorized to perform lockout procedures for each campus. Each Facilities Management and Services Department is required to develop and implement a lockout program specific to their campus. Please refer to each campus specific lockout/tagout program for more information

Each new or transferred “affected” employee and “other” employees who work operations or may be in the area shall be instructed in the purpose and the use of the lockout procedure. The job titles of the affected employees are contained in Appendix B. Prior to lockout, the senior authorized individual will brief all affected employees in person. Any employee who could be exposed to hazardous energy sources shall be instructed in the safety significance of the lockout procedure.

### **A. Preparation for Lockout**

The “authorized” employee shall make a survey using Appendix D 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. More than one hazardous energy source and/or means of disconnect (electrical, mechanical, or other) may be involved. Consult Appendices E-F, the instructions in the Preventive Maintenance System and then follow the specified procedure. If specific procedures have not been developed and documented in Appendices E-F they shall be developed and documented before work is begun. No work can proceed until the Director of Facilities Management and Services or his designee writes and provides the authorized person with a specific procedure.

### **B. Notification of Lockout**

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

If the machine or equipment is operating, shut it down by the normal stopping procedure. This is usually done by depressing the stop button, open toggle switch, etc. In addition, ensure that all stored energy is dissipated or properly restrained.

### C. Verification of Isolation

**Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energizations of the machine or equipment have been accomplished.**

### D. Application of Control

Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s).

Lockout device application.

1. Locks shall be affixed to each energy isolating device only by an "authorized" employee.
2. Locks shall be singularly identified.
3. Locks shall be affixed in a manner that will hold the energy isolating devices in a safe or off position.
4. All potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe. (If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall continue until the possibility of accumulation no longer exists.
5. After ensuring that no personnel are exposed, 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. (See Appendices E-F for procedures for specific machinery and equipment)

**CAUTION: RETURN OPERATING CONTROL(S) TO "NEUTRAL" OR "OFF" POSITION AFTER THE TEST**

The equipment is now locked out.

### E. Testing or Positioning of Machines, Equipment, or Components

In situations when lockout 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 shall be followed:

1. Clear the machine or equipment of tools and materials.
2. Remove employees from the machine or equipment area.
3. Remove the lockout.

4. Energize and proceed with testing or positioning.
5. De-energize all systems and reapply energy control measures in accordance with the requirements set forth in the lockout procedure.

#### **F. Restoring Machines or Equipment to Normal Production Operations**

After the servicing and/or maintenance are complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

After all tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, remove all lockout devices and notify the "affected" employees of their removal. Operate the energy isolating devices to restore energy to the machine or equipment.

#### **G. Procedure Involving More Than One Person (group lockout)**

In the preceding steps, if more than one individual is required to lockout equipment, each shall place his/her own assigned lockout device on the energy isolating device(s).

When an energy isolating device cannot accept multiple locks, a multiple lockout (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the use of multiple locks to secure it.

Each employee will then use his/her assigned lock to secure the box or cabinet.

As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet.

#### **H. Removal of Lockout Devices by Other Than the Authorized Employee**

Lockout devices shall be removed from energy isolating devices by the authorized employee who applied it. **EXCEPT:**

1. Lockout devices may be removed by the Facilities Manager or Acting Facilities Manager in the Facilities Managers' absence if the authorized employee who applied it is not available, and,
2. It is verified that the authorized employee who applied the device is not at the facility,
3. All reasonable efforts were made to contact the authorized employee to inform him/her that their lockout device has been removed and,
4. The authorized employee has this knowledge before he/she resumes work at that facility.

## **I. Informing Outside Contractors**

The Facilities Manager or Acting Facilities Manager in the Facilities Managers' absence will inform all outside contractors of the elements of this program and obtain information regarding their lockout programs. This information shall be conveyed to our employees in an understandable manner. The work efforts covered by the procedure shall be fully coordinated and complied with by the contractor and TCC employees.

## **J. Shift or Personnel Changes**

In the case of shift or personnel changes, a change-over period will be established so that the authorized employees may exchange their assigned locks. Authorized personnel assuming control of lockout of equipment shall be fully briefed in the scope and stage of the work by those whom are being relieved.

## **K. Periodic Inspections**

Periodically (at least annually) the effectiveness of the entire program will be evaluated by an authorized employee other than the one(s) utilizing the energy control procedure being inspected. Any deviations or inadequacies shall be documented and corrected. These annual evaluations will be conducted during the month of **July** each year.

The date of the inspection/evaluation will be documented on the Annual Inspection Report (Appendix C) and maintained as a part of this program until the next annual evaluation replaces it.

## **L. Training**

Training shall be given to all authorized, affected and other personnel as required by 29 CFR 1910.147(c)(7) and 29 CFR 1910.332.

The Facilities Manager, Acting Facilities Manager in the Facilities Managers absence or District Management will conduct training and prepare a record and certify that the employee training has been accomplished. The certification will be made on Appendix H (Training Record).

The Facilities Manager, Acting Facilities Manager in the Facilities Managers absence or District Management will conduct retraining whenever there is:

1. A change in their job assignments,
2. A change in their job assignments, a change in machines, equipment or processes that present a new hazard, or
3. When there is a change in the energy control procedures

Additional retraining shall also be conducted whenever the periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the application of the lockout program, and/or the content of the program itself.

**M. Accidents Concerning Lockout**

The Facilities Manager, Acting Facilities Manager in the Facilities Managers absence or District Management will be responsible for fully investigating all lockout accidents, and reporting the cause of such incident to the Director of Safety and Security. If the accident involved the control of hazardous energy with a single lockout source, a specific procedure will be written and included in Appendix F before work is continued.

If the accident involved a specific procedure for a piece of equipment, the lockout specific procedure will be reviewed and modified (if necessary) prior to authorizing the work to continue.

**APPENDIX A. SAMPLE LIST OF AUTHORIZED LOCKOUT INDIVIDUALS WITH  
ASSIGNED LOCK NUMBERS**

**CAMPUS**

<b>WORK AREA</b>	<b>TITLE</b>	<b>NAME</b>	<b>LOCK #</b>	<b>MECHANICAL</b>	<b>ELECTRICAL</b>
Campus Wide	Supervisor		1	yes	yes
Campus Wide	Foreman		2	yes	yes
Campus Wide	HVAC Tech		3	yes	yes
Campus Wide	Utility Tech		4		yes
Campus Wide	Utility Tech		5	yes	yes
Campus Wide	Utility Tech		6		yes
Campus Wide	Utility Tech		7		yes
Campus Wide	Utility Tech		8		yes
Campus Wide	HVAC Tech		14	yes	yes
Campus Wide	Utility Tech		15		yes
Campus Wide	Utility Tech		16	yes	yes
Campus Wide	Utility Tech		18		yes

**NOTE: AUTHORIZED ELECTRICAL LOCKOUT REQUIRES QUALIFIED WORKER IN  
ACCORDANCE WITH SUBPART "S" 29 CFR PART 1910**





**APPENDIX C. SAMPLE ANNUAL EVALUATION REPORT**

**CAMPUS**

DATES OF EVALUATION \_\_\_\_\_

EVALUATION CONDUCTED BY: \_\_\_\_\_ (PRINT)

GENERAL POLICY HAS BEEN REVIEWED YES/NO (CIRCLE ONE)

COMMENTS ON GENERAL POLICY:

THE FOLLOWING SPECIFIC PROCEDURES HAVE BEEN REVIEWED (LIST BELOW):

FOLLOWING SPECIFIC PROCEDURES WERE MODIFIED (LIST BELOW):

THE FOLLOWING SPECIFIC PROCEDURES WERE ADDED (LIST BELOW):

THERE HAS BEEN A REVIEW OF THE LOG OF OCCUPATIONAL INJURIES AND ILLNESSES (OSHA FORM 200 OR EQUIVALENT) AND THE ASSOCIATED ACCIDENT REPORTS AND INJURY/ILLNESS REPORTS (OSHA FORM 101 OR EQUIVALENT): YES/NO (CIRCLE ONE)

THE FOLLOWING INJURIES RESULTED FROM LOCKOUT (LIST BELOW):

**APPENDIX D. SAMPLE LOCKOUT SURVEY/CHECKLIST OF PROCEDURES**

**ENERGY SOURCE DETERMINATION**

**CAMPUS**

DATE: \_\_\_\_\_

CONDUCTED BY: \_\_\_\_\_

In order to determine all energy sources for each piece of equipment, all questions must be answered. Both actual and potential sources of energy need to be considered when responding to the questions. If the question does not apply, write N/A in the blank. Circle "yes" or "no" or fill in the blank.

Location: \_\_\_\_\_

Work Center: \_\_\_\_\_

Line: \_\_\_\_\_

Equipment No.: \_\_\_\_\_

Equipment Name: \_\_\_\_\_

\_\_\_\_\_

Serial No.: \_\_\_\_\_

Lockout Procedure No. Assigned: \_\_\_\_\_

Does this equipment have:

a) Electrical power (including battery)? YES/NO

If yes, Motor Control Center (MCC) or power panel and breaker number

\_\_\_\_\_

b) Mechanical power? YES/NO

Mark each type of energy source that applies:

1. Engine driven? YES/NO

If yes, switch or key location: \_\_\_\_\_

Is lockout device installed? YES/NO

If no, method of preventing operation: \_\_\_\_\_

2. Spring Loaded? YES/NO

If yes, is there a method of preventing spring activation? YES/NO  
If no, how can spring tension be safely released or secured?

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3. Counter weight(s) YES/NO

If yes, does it have a method of preventing movement? YES/NO

If yes, can it be locked? YES/NO

If no, how can it be secured?

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4. Flywheel? YES/NO

If yes, does it have a method of preventing movement? YES/NO

If no, how can it be secured?

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5. Hydraulic power? YES/NO

If yes, location of main control/shut off valve

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Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shut off valve: \_\_\_\_\_

Does manual shut off valve have lockout device? YES/NO

If no, what is needed to lock valve closed?

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Is there a bleed or drain valve to reduce pressure to zero? YES/NO

If no, what will be required to bleed the pressure?

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6. Pneumatic energy? YES/NO

If yes, location of main control/shut off valve

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Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shut off valve: \_\_\_\_\_

Does manual shut off valve have lockout device? YES/NO

If no, what is needed to lock valve closed?

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Is there a bleed or drain valve to reduce pressure to zero? YES/NO

If no, what will be required to bleed the pressure?

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7. Chemical system? YES/NO

If yes, location of main control/shut off valve

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Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shut off valve: \_\_\_\_\_

Does manual shut off valve have lockout device? YES/NO

If no, what is needed to lock valve closed?

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Is there a bleed or drain valve to safely reduce system pressure and drain system of chemicals? YES/NO

If no, how can system be drained and neutralized?

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What personal protective clothing or equipment is needed for this equipment?

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8. Thermal energy? YES/NO

If yes, location of main control/shut off valve

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Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shut off valve: \_\_\_\_\_

Does manual shut off valve have lockout device? YES/NO

9. Gravitational energy? YES/NO

If yes, location of main control/shut off valve

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Is there a device to restrain or control the gravitational energy? YES/NO

If no, what will be required to control or restrain the gravitational energy?

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Can the device used to restrain or control the gravitational energy be locked in a position that will prevent the gravitational energy from being released?

10. Other Sources of energy?

Are there any other actual or potential energy sources? YES/NO

If yes, location of main control/shut off valve: \_\_\_\_\_

Can control/shut off valve be locked in an off or closed position? YES/NO

If no, what is needed to lock valve closed?

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Is there a bleed or drain valve to safely reduce system pressure and temperature and drain system? YES/NO

If yes, what is the location of the valve?

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If no, how can system pressure and temperature be reduced and drained?

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Is personal protective clothing or equipment needed to protect employee from the energy source? YES/NO

If yes, what personal protective clothing or equipment is needed?

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Special precautions not noted in the preceding (i.e. fire hazards, chemical reactions, required cool down periods, etc.): \_\_\_\_\_

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Recommendations or comments: \_\_\_\_\_

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Completed by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

Approved by: \_\_\_\_\_



## **APPENDIX E. LIST OF ALL LOCKOUT PROCEDURES**

**(sample procedures at the Virginia Beach Campus)**

PROCEDURE NO.

EQUIPMENT, MACHINE OR PROCESS

1. Boiler Lynnhaven Building
2. Chiller Roof top Lynnhaven Building
3. Chillers #1 and 2 Bayside Building
4. Air Handlers Roof top #1 and 2 Science Building

APPENDIX F

SPECIFIC LOCKOUT PROCEDURES

(Sample procedures)

**Lock Out of Hazardous Energy Control Procedure  
Tidewater Community College  
Facilities Department, Virginia Beach Campus**

<b>Machine/Equipment:</b> <u>Boiler</u>	<b>Procedure #:</b> <u>Mechanical 1</u>
<b>Location:</b> <u>Lynnhaven Building</u>	

**Purpose:** *This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or serving is done on machines or equipment.*

**Compliance:** *All Mechanical Authorized employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures.*

**Equipment Sequence for Lock Out**

*The following step-by-step procedure must be followed to lock/tag out, isolate, block, and secure this piece (or class) of equipment/machine*

1. Notify ALL affected personnel.
2. Turn off disconnect marked Boiler on the Motor Control center located in front of the boiler.
3. Turn off Breaker #12 in panel marked LF located in hallway across from classroom E141.
4. \_\_\_\_\_

**Lock Out Devices**

*List Lock Out devices that will be used and the steps to safely place, remove, and transfer Lock Out devices onto energy isolating device(s)*

1. Locks and info tags
2. Breaker lock outs
3. \_\_\_\_\_
4. \_\_\_\_\_

**Release All Hazardous Energy Sources**

*Carry out the following steps to release any residual or stored energy (i.e. capacitors) of the equipment/machine:*

1. \_\_\_\_\_ Na \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Verify Equipment/Machine is in a Zero Mechanical State (ZMS)**

*Before performing service or maintenance, verify the equipment/machine is in a ZMS. Examples include but are not limited to: Use test meter on electrical equipment, activate start buttons. Carry out the following steps:*

1. Use a volt meter to verify all power has been turned off.
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

### **Re-energizing Equipment/Machine**

*Before start-up of equipment/machine after servicing, carry out the following steps:*

1. Make sure all repairs or service have been completed.
2. *Notify all affected personnel that Lock Out devices are being removed from equipment/machinery and all personnel are safely positioned away from the equipment/machinery.*
3. *Check for and retrieve all loose tools, equipment/machine parts. Reinstall all removed machine/equipment guards.*
4. *Remove all Lock out devices from energy isolating devices.*
5. *Operate the energy isolating devices to restore energy to the equipment/machine.*

**Lock Out of Hazardous Energy Control Procedure  
Tidewater Community College  
Facilities Department, Virginia Beach Campus  
(sample procedures)**

<b>Machine/Equipment:</b>	Chiller	<b>Procedure #:</b>	Mechanical 2
<b>Location:</b>	Lynnhaven Building Roof top		

**Purpose:** This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or serving is done on machines or equipment.

**Compliance:** All Mechanical Authorized employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures.

**Equipment Sequence for Lock Out**

The following step-by-step procedure must be followed to lock/tag out, isolate, block, and secure this piece (or class) of equipment/machine

1. Notify ALL affected personnel.
2. Turn off breaker marked Chiller located in panel LL inside the penthouse beside the chiller.
3. Turn off Breaker #25 in panel LL located in the penthouse beside the chiller.
4. \_\_\_\_\_

**Lock Out Devices**

List Lock Out devices that will be used and the steps to safely place, remove, and transfer Lock Out devices onto energy isolating device(s)

1. Locks and info tags
2. Breaker lock outs
3. \_\_\_\_\_
4. \_\_\_\_\_

**Release All Hazardous Energy Sources**

Carry out the following steps to release any residual or stored energy (i.e. capacitors) of the equipment/machine:

1. \_\_\_\_\_ Na \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Verify Equipment/Machine is in a Zero Mechanical State (ZMS)**

Before performing service or maintenance, verify the equipment/machine is in a ZMS. Examples include but are not limited to: Use test meter on electrical equipment, activate start buttons. Carry out the following steps:

1. Use a volt meter to verify all power has been turned off. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Re-energizing Equipment/Machine**

Before start-up of equipment/machine after servicing, carry out the following steps:

1. Make sure all repairs or service have been completed.
2. Notify all affected personnel that Lock Out devices are being removed from equipment/machinery and all personnel are safely positioned away from the equipment/machinery.
3. Check for and retrieve all loose tools, equipment/machine parts. Reinstall all removed machine/equipment guards.
4. Remove all Lock out devices from energy isolating devices.
5. Operate the energy isolating devices to restore energy to the equipment/machine.

**Lock Out of Hazardous Energy Control Procedure**  
**Tidewater Community College**  
**Facilities Department, Virginia Beach Campus**  
**(sample procedures)**

<b>Machine/Equipment:</b>	Chillers # 1 and 2	<b>Procedure #:</b>	Mechanical 3
<b>Location:</b>	Bayside Building		

**Purpose:** This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or serving is done on machines or equipment.

**Compliance:** All Mechanical Authorized employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures.

**Equipment Sequence for Lock Out**

The following step-by-step procedure must be followed to lock/tag out, isolate, block, and secure this piece (or class) of equipment/machine

1. Notify ALL affected personnel. \_\_\_\_\_
2. Main power disconnect is located in the Library Workout room B103 \_\_\_\_\_
- 2 Breakers are in Panel MDF and breakers are labeled Chiller 1 Chiller2 \_\_\_\_\_
4. Turn off Breaker 1 or 2 depending on which unit is being locked out. \_\_\_\_\_

**Lock Out Devices**

List Lock Out devices that will be used and the steps to safely place, remove, and transfer Lock Out devices onto energy isolating device(s)

1. Locks and info tags \_\_\_\_\_
2. Breaker lock outs \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Release All Hazardous Energy Sources**

Carry out the following steps to release any residual or stored energy (i.e. capacitors) of the equipment/machine:

1. \_\_\_\_\_ Na \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Verify Equipment/Machine is in a Zero Mechanical State (ZMS)**

Before performing service or maintenance, verify the equipment/machine is in a ZMS.

Examples include but are not limited to: Use test meter on electrical equipment, activate start buttons. Carry out the following steps:

1. Use a volt meter to verify all power has been turned off. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Re-energizing Equipment/Machine**

Before start-up of equipment/machine after servicing, carry out the following steps:

1. Make sure all repairs or services have been completed.
2. Notify all affected personnel that Lock Out devices are being removed from equipment/machinery and all personnel are safely positioned away from the equipment/machinery.
3. Check for and retrieve all loose tools, equipment/machine parts. Reinstall all removed machine/equipment guards.



4. Remove all Lock out devices from energy isolating devices.
  5. Operate the energy isolating devices to restore energy to the equipment/machine.
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**Lock Out of Hazardous Energy Control Procedure  
Tidewater Community College  
Facilities Department, Virginia Beach Campus  
(sample procedures)**

<b>Machine/Equipment:</b>	Air Handlers # 1 and 2	<b>Procedure #:</b>	Mechanical 4
<b>Location:</b>	Science Building Roof top		
<b>Note :</b>	When servicing any one of the 4 fans located in either of the 2 units you will need to shut down all 4 motors to eliminate any freewheeling on the fan your working on.		

**Purpose:** This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or serving is done on machines or equipment.

**Compliance:** All Mechanical Authorized employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures.

**Equipment Sequence for Lock Out**

The following step-by-step procedure must be followed to lock/tag out, isolate, block, and secure this piece (or class) of equipment/machine

1. Notify ALL affected personnel. \_\_\_\_\_
2. All power to the fans is shut off by turning off the VFD's located inside each unit. \_\_\_\_\_
2. \_\_\_\_\_
4. \_\_\_\_\_

**Lock Out Devices**

List Lock Out devices that will be used and the steps to safely place, remove, and transfer Lock Out devices onto energy isolating device(s)

1. Locks and info tags \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Release All Hazardous Energy Sources**

Carry out the following steps to release any residual or stored energy (i.e. capacitors) of the equipment/machine:

1. \_\_\_\_\_ Na \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Verify Equipment/Machine is in a Zero Mechanical State (ZMS)**

Before performing service or maintenance, verify the equipment/machine is in a ZMS.

Examples include but are not limited to: Use test meter on electrical equipment, activate start buttons. Carry out the following steps:

1. Use a volt meter to verify all power has been turned off. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Re-energizing Equipment/Machine**

Before start-up of equipment/machine after servicing, carry out the following steps:

1. Make sure all repairs or service have been completed.
2. Notify all affected personnel that Lock Out devices are being removed from equipment/machinery and all personnel are safely positioned away from the equipment/machinery.
3. Check for and retrieve all loose tools, equipment/machine parts. Reinstall all removed machine/equipment guards.

4. Remove all Lock out devices from energy isolating devices.

5. Operate the energy isolating devices to restore energy to the equipment/machine.

## **APPENDIX G. GENERAL RULES FOR LOCKOUT PROGRAM**

- Procedures have been developed, documented and will be utilized for control of potentially hazardous energy.
- Employer has provided locks, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware to isolating, securing or blocking machines or equipment.
- Lockout devices singularly identified.
- Lockout devices are used only for controlling energy.
- Lockout devices are not used for other purposes.
- Lockout devices must be capable of withstanding the environment to which they are exposed to for the maximum period of time that exposure is expected.
- Lockout devices must be standardized with each facility by, at least color, shape, or size.
- Writing on lockout devices and procedures must be legible and understandable.
- Lockout devices must indicate the identity of the employee applying the devices.
- When major modifications are made to machinery electrical systems or when new machinery is installed, the energy source must be designed to accept a lockout device.
- Inspection and review must be conducted at least annually.
- Inspections must be performed by an authorized employee other than those that utilize the energy control procedure under inspection.
- Inspections should be used to correct any deviations or inadequacies observed.
- Annual reviews should include review of each authorized employee's responsibilities under the procedure(s).

**APPENDIX H. TRAINING/CERTIFICATION RECORD TEMPLATE FOR LOCKOUT**

**Training Topic:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Department:** \_\_\_\_\_

**Participants:**

**Name:**

**Signature:**

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

**Instructor:** \_\_\_\_\_

**Date:** \_\_\_\_\_