Appendix D: Examples of Hazardous Energy Control Procedures at UC Irvine’s Central Plant

Central Plant Chiller #3 Overhaul

Lockout/Tagout Procedures

**Purpose**
This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

**Responsibility**
The responsibility for seeing that this procedure is followed is incumbent upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by their supervisor or manager. Each new or transferred affected employee shall be instructed by their supervisor or manager in the purpose and use of the lockout procedure.

**Preparation for Lockout**
Employees authorized to perform lockout shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors or managers. Before lockout commences, job authorization should be obtained.

**Sequence of Lockout Procedure**
UC Irvine Central Plant facility:

a) Overhaul of Chiller #3
   1. Shut down manual butterfly valves on chilled water supply and chilled water return.
   2. Shut down condenser water supply butterfly valve.
   3. Shut down condenser water supply return valve.
4. Shut down main power on Chiller Starter. Lock and tag out disconnect.

5. Shut down equipment pump by shutting down disconnect. Lock and tag out disconnect for pump.

6. Verify equipment is de-energized by going to equipment control panel and trying to push any button to start equipment.

**Restoring Equipment to Service**
When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed. When the equipment is clear, remove all locks. The energy isolating device may be operated to restore energy to the equipment.

**Procedure Involving More Than One Person**
In the preceding steps, if more than one individual is required to lock out equipment, each shall place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

**Rules for Using Lockout Procedure**
All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.
Lockout/Tagout Procedures

Purpose
This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

Responsibility
The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by their supervisor or manager. Each new or transferred affected employee shall be instructed by their supervisor or manager in the purpose and use of the lockout procedure.

Preparation for Lockout
Employees authorized to perform lockout shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors or managers. Before lockout commences, job authorization should be obtained.

Sequence of Lockout Procedure

UC Irvine Central Plant facility:

a) High Temperature Hot Water Pumps (HTHW) – Pump #3
   1. Lock out supply and return valves
   2. Shut down power supply to pump #3 at the Motor Control Center (MCC). Lock and tagout breaker.
   3. Shut down inlet valve and associated discharge valve and tag out.
   4. Verify equipment is de-energized by attempting to power up pump.

Restoring Equipment to Service
When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed. When the equipment is clear, remove all locks. The energy isolating device may be operated to restore energy to the equipment.

**Procedure Involving More Than One Person**
In the preceding steps, if more than one individual is required to lock out equipment, each shall place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

**Rules for Using Lockout Procedure**
All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.
Central Plant Boiler Feed Pump #2

Lockout/Tagout Procedures

Purpose
This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

Responsibility
The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by their supervisor or manager. Each new or transferred affected employee shall be instructed by their supervisor or manager in the purpose and use of the lockout procedure.

Preparation for Lockout
Employees authorized to perform lockout shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors or managers. Before lockout commences, job authorization should be obtained.

Sequence of Lockout Procedure
UC Irvine Central Plant facility:
Boiler Feed Pump #2

1. Shut down main disconnect and lock and tag.

2. Shut down discharge valve and inlet valves.

3. Verify equipment is de-energized by attempting to power up pump.

Restoring Equipment to Service
When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed. When the equipment is clear, remove all locks. The energy isolating device may be operated to restore energy to the equipment.

Procedure Involving More Than One Person
In the preceding steps, if more than one individual is required to lock out equipment, each shall place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the
crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a
crew lock until it has been verified that all individuals are clear.

**Rules for Using Lockout Procedure**
All equipment shall be locked out to protect against accidental or inadvertent operation when such
operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy
isolating device bearing a lock.
Central Plant Fuel Oil Pumps

Lockout/Tagout Procedures

Purpose
This procedure establishes the minimum requirements for lockout of energy sources that could cause injury to personnel. All employees shall comply with the procedure.

Responsibility
The responsibility for seeing that this procedure is followed is binding upon all employees. All employees shall be instructed in the safety significance of the lockout procedure by their supervisor or manager. Each new or transferred affected employee shall be instructed by their supervisor or manager in the purpose and use of the lockout procedure.

Preparation for Lockout
Employees authorized to perform lockout shall be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source (electrical, mechanical, or others) may be involved. Any questionable identification of sources shall be cleared by the employees with their supervisors or managers. Before lockout commences, job authorization should be obtained.

Sequence of Lockout Procedure
UC Irvine Central Plant facility:
Fuel oil pumps
1. Shut off main disconnect and lock and tag.
2. Shut off suction valves from tank.
3. Shut off pump discharge valve.
4. Verify equipment is de-energized by attempting to start up pump.

Restoring Equipment to Service
When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed. When the equipment is clear, remove all locks. The energy isolating device may be operated to restore energy to the equipment.

Procedure Involving More Than One Person
In the preceding steps, if more than one individual is required to lock out equipment, each shall place his/her own personal lock on the energy isolating device(s). One designated individual of a work crew or a supervisor, with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it may be the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the designated individual shall not remove a crew lock until it has been verified that all individuals are clear.

Rules for Using Lockout Procedure
All equipment shall be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy isolating device bearing a lock.