CAP
CENTRAL ARIZONA PROJECT

HAZARDOUS ENERGY CONTROL PROGRAM
Aug 2022
Version 3.4

1 INTRODUCTION

1.1 Purpose

The purpose of the Hazardous Energy Control Program (HECP) is to establish coordinated and consistent procedures for controlling hazardous energy and maintaining operational control of a facility's configuration.

This document establishes procedures and operating criteria for the safety of service or maintenance personnel who work on or near any system that produces, uses, or stores hazardous energy. It establishes minimum standards and performance requirements for the control of hazardous energy at all CAP operated facilities.

1.2 Philosophy

Safe work practices take precedence over immediate job production. No job is so important and no service is so urgent that we cannot take the time to perform our work safely.

The following principles are considered basic to the safe operation of the Central Arizona Project's power and water system:

1.2.1 Priorities:

A. Physical safety of the employees and the public.
B. Integrity and reliability of the CAP's power and water system.
C. Protection of equipment.
D. Service to the customer.

1.2.2 Lockout/Tagout Rules

A. Red DANGER tags and Two-Part personal tags are to be considered the same as locks. Locks with tags must be used on devices capable of receiving a lock.
B. Violating a Red Lock, a Red Tag, or a Blue Lock and Two-Part Tag, can kill somebody.
C. Equipment must not be operated, moved, or removed when Red Tags, Red Locks, or Two-Part Tags with Blue Locks are in place.
D. Energy isolation devices capable of being locked must be locked when using hazardous energy control procedures.
E. Use a multi-lock hasp in all cases where an energy isolation device is locked.
F. Equipment must be considered energized until appropriate tests have been performed to verify the equipment is de-energized.
G. NO EMPLOYEE WILL BE REQUIRED TO WORK ON A JOB OR PIECE OF EQUIPMENT THAT THEY CONSIDER UNSAFE. The employee is responsible for requesting additional protection deemed necessary.

1.2.3 Switching

All switching operations must be guided and tested by the following fundamental principles:

A. Start with the correct procedure and follow it exactly.

B. The six basic steps of switching:
    1. Carry the switching program form with you while switching;
    2. Touch or point to the device identification nameplate to verify correct device;
    3. Recheck the switching program form for correct device and sequence;
    4. Verify anticipated device position;
    5. Perform requested action on the device; and
    6. Verify desired device position.

1.3 Hazardous Energy Control Program (HECP)

1.3.1 Related Safety Programs

The Hazardous Energy Control Program (HECP) complies with Central Arizona Project's Safety Resource Manual and Central Arizona Project's Electrical Safety Program.

1.3.2 Roles and Responsibilities

The HECP defines the specific roles and responsibilities for the various job functions described herein. An employee authorization list will be maintained for each facility in the Clearance Log Entry and Tracking system.

1.3.3 Hazardous Energy Control Procedures

The Program establishes Clearances and Specific Hazardous Energy Control Procedures for each facility that are filed in the Hazardous Energy Control Program folder.

1.3.4 Training

Training shall be provided in accordance with Section 3 to ensure that all personnel understand the purpose and function of the Hazardous Energy Control Program (HECP).

1.3.5 Program Review and Revision

This Hazardous Energy Control Program (HECP) will be reviewed every three years by the Electrical Safety Program Administrator's Office, to ensure that the guidelines and procedures herein are adequate for the safe and reliable operation and maintenance of the Central Arizona Project (CAP) power and water system. The reviews will be done along with the Electrical Safety Program review, which coincides with the issuance of the latest revision of NFPA 70E.

1.3.6 Availability

This program shall be available online through the Safety Resource Center.

1.4 Hazardous Energy Assessment

As part of the job planning process, define the perimeter of the working area. Next identify all sources of hazardous energy to be controlled for the safe execution of the work. Lockout/tagout procedures are developed, coordinated and implemented to establish a safe working condition.

1.5 Job Hazard Analysis & Pre-Job Briefing

Prior to starting work, a Job Hazard Analysis shall be prepared to identify all hazards specific to the work to be performed. All hazards identified shall be addressed and

mitigation techniques, such as lockout/tagout, identified on the JHA/PJB form. A pre-job briefing with the workers will be conducted to review the JHA and the job plan.

1.6 Types of Lockout/Tagout

There are three types of lockout/tagout:

1.6.1 Simple Lockout/Tagout (Single Source)

Applies to single sources of hazardous energy, under 600 volts, uses a blue lock and two-part tag on the isolation device with no written procedure required. This application is approved and administered locally by authorized personnel.

1.6.2 Specific Energy Control Procedure

Applies to multiple sources of hazardous energy, under 600 volts, uses red locks and red tags on the isolation devices and requires a written procedure. This application is approved and administered locally by authorized personnel.

1.6.3 Clearance

Applies to single and multiple sources of hazardous energy, over 600 volts, and/or engulfment hazards in a confined space. Requires a written procedure and is approved and administered by Water Control, Electrical Safety Administration and local authorized personnel.

1.7 Interpretations

The stated interpretations for the following words shall be applied throughout this Hazardous Energy Control Program Manual.

"Must"	Mandatory
"Shall"	Mandatory
"Should"	Advisory
"May"	Permissive choice
"Will"	Mandatory, but allowing the employee or party some discretion as to when, where, or how.

As used in this Hazardous Energy Control Program Manual, the pronouns "he,' "his," and "himself" refer to a specific individual or position that might be "she," "her," or "herself" in a given circumstance. Also used in this context is the term "Switchman".

1.8 Emergencies

In an emergency (see Section 19 Definitions), authorized employees may suspend general switching requirements temporarily as necessary to permit proper handling of the specific emergency. However, in handling such emergencies, safety of personnel shall be the first priority.

1.9 Document Retention

Clearances and Two-Part tags are retained for five years. Electrical Safety Program Administrators are responsible for collecting the documents and sending them to Records Management for storage. Maintenance Supervisors are responsible for providing storage receptacles and binders for these documents at their facilities.

1.10 References

Department of Labor, Occupational Safety and Health Administration,

29 CFR Part 1910.147 https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147

Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910.269 https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.269

Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910, Subpart S https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910SubpartS

Reclamation Facilities, Instructions, Standards and Techniques
FIST Volumes: https://www.usbr.gov/power/data/fist_pub.html

- *Volume 1-1 Hazardous Energy Control Program*

- *Volume 5-1 Personal Protective Grounding*

- *Volume 3-29 Energized Facility Maintenance*

2 RESPONSIBILITY AND AUTHORITY

2.1 Programmatic Responsibilities

2.1.1 Maintenance Managers

The maintenance manager for each facility shall ensure that the requirements of this Hazardous Energy Control Program are:

a. Properly applied;
b. Strictly adhered to; and
c. Understood by all affected employees.

2.1.2 Safety Department

a. Responsible for compliance of the Lockout/Tagout procedure.
b. Verifies that the HECP meets or exceeds OSHA requirements.
c. May provide assistance to the Electrical Safety Program Administrator in performing periodic annual audits.

2.1.3 Engineering and Contracts

Ensure the specification section of contracts issued contain references to the applicable OSHA Lockout/Tagout Standards.

2.1.4 Purchasing Department

Assures that outside contractors submit copies of the contractor's safety program for review to the Safety Department.

2.2 Functional Responsibilities

2.2.1 Training Administrator

a. Maintains employee safety-related training records.

b. Tracks HECP retraining intervals to maintain compliance with training requirements.
c. Administers web-based training for the HECP.

2.2.2 Maintenance Supervisors

Maintenance supervisors request clearances and authorize their employees to perform switching and hold clearances and SECP's on their assigned facilities and equipment. Authorized Employees are on a list maintained by Electrical Safety Administrators in Clearance Log Entry and Tracking (CLEAT). They are responsible for any emergency switching that is assigned to personnel in emergency situations as described in Section 1.8.

2.2.3 Water Control Supervisor

Water Control Supervisor approves outage requests, internal and external; approves dive requests and manages special work permits for dives, and may be responsible for emergency switching as described in Section 1.8.

2.2.4 Water Control Dispatcher

Water Control Dispatcher issues clearances, logs actions and applies SCADA status tags to equipment control displays. Also issues interconnected system clearances and accepts external interconnected system clearances. Gives "no backfeed" assurance for hot line orders on interconnected systems.

2.2.5 Electrical Safety Program Administrator

a. Administers, maintains, and revises the Lockout/Tagout procedures where required.
b. Maintains locks for all facilities.
c. Identify, generate, and maintain equipment-specific written procedures as required.
d. Conducts annual audits of activity within HECP.
e. Provides guidance and feedback to Authorized Employees regarding HECP procedures.

2.2.6 CAP Representative

Monitors contractor work performed within a lockout/tagout procedure. Discusses the protection provided with the contractor to assure its adequacy and defines the perimeter and conditions of the safe working area. Prepares the Special Work Permit form. This function will normally be handled by a Construction Inspector, Project Manager, Project Engineer or the Job Supervisor.

2.2.7 Job Supervisor

An Authorized Employee who receives and releases clearances and specific energy control procedures. He may act as the CAP Representative for special work permits. Job Supervisors must have the knowledge and skills necessary for the safe application, use, and removal of hazardous energy control procedures. A Job Supervisor is responsible for verifying that the lockout/tagout procedure is implemented and ensuring the task is completed before removal of the lockout/tagout procedure. "Job Supervisor" is an HECP function. A Job Supervisor is not associated with the management or supervision of personnel.

2.2.8 Switchman

An Authorized Employee designated by the Maintenance Supervisor, based on his knowledge of the equipment and procedures in his area of responsibility, to perform switching for lockout/tagout or reconfiguring facility systems. A switchman can be a mechanic or an electrician.

2.2.9 High Voltage Switchman

An Authorized Employee designated by his Maintenance Supervisor, based on his knowledge of the equipment and procedures in his area of responsibility, to perform switching on electrical systems rated 600 volts or greater. He is not required to be the Job Supervisor on clearances he has placed.

2.2.10 Worker

An Affected Employee who places a personal lock and tag, and works within a lockout/tagout procedure. The Worker is responsible for verifying the protection provided by the lockout/tagout is adequate for the task(s) they are performing, and if determined it is not adequate, notifying the Job Supervisor. The Worker is responsible for maintaining control of the key to their personal lock.

2.2.11 Planner

The planner consults with the maintenance supervisor to assess the hazardous energy exposure and boundaries for the job scope. This information is included in the outage request that the planner initiates.

3 TRAINING

3.1 Purpose

Ensure that all CAP employees involved with the HECP have an understanding that is appropriate for their level of hazardous energy exposure.

3.2 Requirements

Training shall be provided to ensure that the purpose and procedures of the Hazardous Energy Control Program (HECP) are understood by all Affected Employees and that Authorized Employees possess the specific knowledge and skills required for the safe application, use, and removal of energy controls.

Training consists of classroom (4 hrs), online through the CAP Learning Center, and on the job.

3.3 Incidental Employees

New employee orientation training: Electrical Safety Awareness parts 1 and 2; and Hazardous Energy Control Program Awareness all within 90 days.
Refresher training: Electrical Safety Awareness part 2 and Hazardous Energy Control Program Awareness refreshed every 3 years. These are all web-based training courses through the CAP Learning Center.

3.4 Affected Employees

New employee orientation training for Affected Employees: Hazardous Energy Control Program Introduction Powerpoint presentation. This presentation provides sufficient training to allow Affected employees to work under a lockout/tagout procedure.

Refresher training for Affected Employees: HECP Affected parts 1 & 2 web-based training, refreshed every 3 years.

3.5 Authorized Employees (HECP Instructor-led Training)

Authorized Employees receive instructor led training which consists of classroom and on the job instruction. Employees are designated as Authorized by their supervisor based on their demonstrated understanding of the facility systems and application of lockout/tagout procedures. New hires are designated as Affected. CAP policy requires at least 9 months of job experience to qualify as Authorized.

3.5.1 Classroom Training

Each Authorized Employee shall receive classroom training in the recognition of hazardous energy sources, lockout/tagout equipment, and the methods and means for energy isolation and control. Affected employees transitioning to Authorized employees will attend the classroom training and thereafter be tracked as authorized in the CAP Learning Center. Refresher training is received every three years.

3.5.2 On the Job Training

Each Authorized Employee shall receive on the job training on the type and magnitude of hazardous energy in the facilities the employee is responsible for and the operation of the systems and isolating devices therein.

3.6 Retraining

Affected and Authorized Employees are required to be retrained before the scheduled refresher training if any of the following conditions exist:

3.6.1 On the Job Retraining

A. New technology, new types of equipment, or changes in procedures necessitate the use of work practices different from those that the employee would normally use.
B. The employee's job assignments change.

3.6.2 HECP Classroom Retraining

A. The supervision or annual audits indicate the employee is not complying with lockout/tagout procedures.
B. HECP processes are changed.
C. The employee needs to review tasks that are not normally performed during regular job duties.
D. Any safety violations, close call or near miss incidents have occurred.

3.7 Training Documentation

HECP training records for each employee are maintained by the Training Administrator.

4 FIELD WORK AUDITS

Annual audits shall be conducted to ensure that the Hazardous Energy Control Procedures are implemented properly, that the employees involved are familiar with their responsibilities under those procedures, and that employees maintain proficiency in, and follow the Hazardous Energy Control Procedures. These audits shall include a sampling of the Hazardous Energy Control Procedures in-process at the facility and visual observations of the process to determine compliance.

4.1 Responsibility

The audits shall be performed by an Electrical Safety Administrator. The auditor must be able to determine whether the steps in the Hazardous Energy Control Procedures are being followed, whether the employees involved know their responsibilities under the procedures, whether the procedures are adequate to provide the necessary protection, and what changes, if any, are needed. The auditor may observe and discuss responsibilities with employees individually or in a group setting.

4.2 Documentation

Audits are documented using the HECP Annual Audit Form. Completed audits are filed in Content Server here.

4.3 Deficiencies

Any deficiencies shall be documented on the audit report and corrective action conducted to ensure future compliance. Corrective actions are also documented on the form.

5 LOCKOUT AND TAGOUT DEVICES

5.1 Locks and Tags

5.1.1 BLUE Personal Locks and Two-Part Tags

A. Blue locks are used for personal protection only. Provides the worker exclusive control of the system being worked on.
B. Used on energy isolation devices that are capable of being locked out for simple lockout/tagout procedures.
C. Used on red lock boxes for clearances and specific energy control procedures.
D. Be a uniquely keyed lock with a single key controlled by the protected worker.
E. The key is retained when the lock is open.
F. The Blue lock must always be accompanied by the upper portion of the Two-Part tag.
G. Two-Part tags may be used alone if no locking means available.

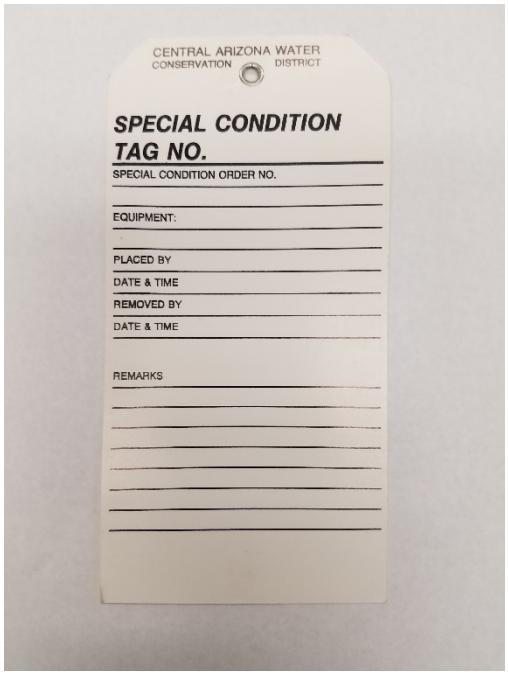
5.1.2 RED Locks and Danger Tags

A. Red locks are used on energy isolation devices to establish the perimeter of a clearance or specific energy control procedure.
B. Red locks are grouped in lock boxes and share the same key.
C. Red locks are always accompanied by a Red Danger tag.
D. Danger tags may be used alone if no locking means available.
E. Lock Box contains the key for the group of red locks and provides the means for securing the key by attaching blue personal locks.

5.1.3 GOLD Locks and Out of Service Tags

A. Gold locks are used to protect equipment.
B. Gold locks are never used to protect people.
C. May be accompanied by an Out of Service tag.
D. Tag may be used alone if no locking means available.
E. Gold locks share a common key.

5.2 Special Condition Tag



A. Used to indicate temporary special operating or limiting instructions.
B. May be used to protect operational equipment.
C. Never used for personnel protection.

5.3 Multi-Lock Hasps

Use multi-lock hasps to apply locks to all energy isolating devices capable of being locked. Use double-lock hasps on the lock box latch for overlapping or transferring LO/TO procedures.

5.4 Locking Devices

Locking devices such as valve operator handle covers, chains, cables, breaker handle locks and similar devices are used as needed to facilitate locking of energy isolating devices or locking multiple lock boxes (to reduce the number of personal locks) . These devices are manufactured for this purpose.

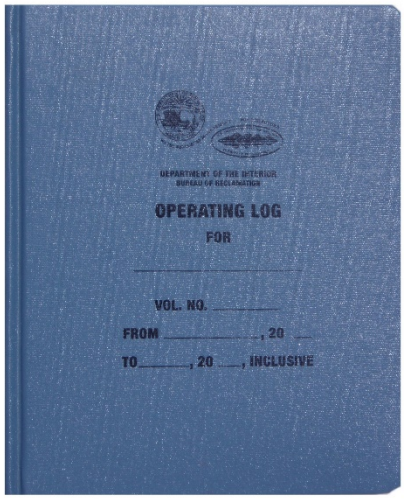
Other devices such as blocks are used to restrain mechanical or stored energy.

Locking devices fabricated for specific needs must be approved by the Safety department before use.

6 STATION LOG BOOKS AND LOG ENTRIES

All hazardous energy control procedures described in this program, with the exception of simple lockout/tagout, must be documented in the station log books as described below. Log book entries must be stamped or legibly printed by hand in black ink. Entries shall be made as soon as possible after the action has been accomplished. The name of the person making entries shall appear in the log. In the event that an error is made on an entry, line out the mistake, initial it, and make a new entry below. Do not erase, black out or white out the mistaken entry.

6.1 Station Operating Log (Blue Book)

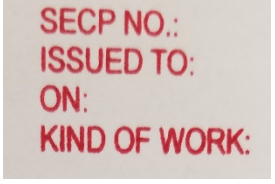


6.1.1 Purpose

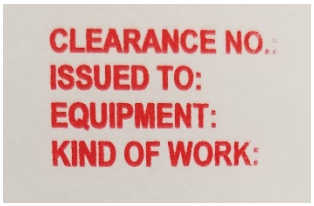
Operational information such as daily plant status, events, alarms, trouble calls, troubleshooting details, repairs, general switching, SECP's, clearances, special conditions, special work permits, out of service, personal protective grounds placement and removal, and supervisory lock removal are entered in the station operating log. The operating log book is available from the warehouse, stock # 1301-0025.

6.1.2 Logging HEC Procedures

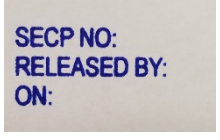
After an SECP, clearance or special work permit is issued or released, or grounds placed or removed, the action shall be logged using the appropriate colored stamp and filling in the blank fields using black ink. Approved stamps are shown below:



Stock # 6678-0012



Stock # 6678-0010



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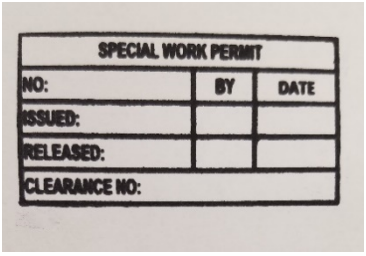
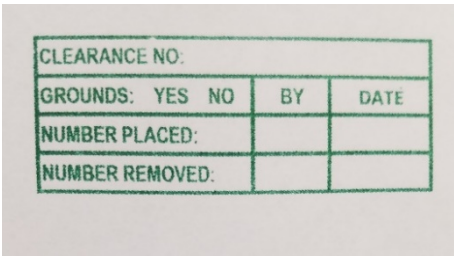
Stock # 6678-0011

Stock # 6678-0015



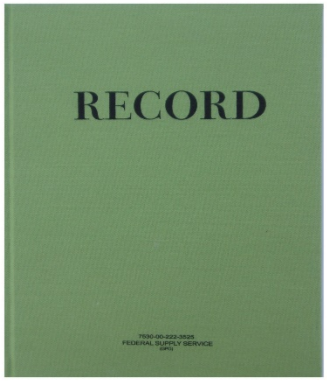
Stock # 6678-0014



If no stamp is available, print the stamp text with the appropriate color ink and fill in the fields with black ink.

Log special conditions, general switching and out of service conditions with black ink and include this information: Sequence number, Equipment, Date of Action and Placed by.

6.2 Plant Record Log (Green Book)



6.2.1 Purpose

The Plant Record Log is used to record HEC procedures in sequence so as to maintain the sequence numbering scheme for each type. This log provides a summary of the activity at the plant.

6.2.2 Logging Procedures

The following procedures are logged in the Plant Record Log:
Clearances
Specific Energy Control Procedures
General Switching
Special Work Permits
Out of Service
Special Conditions
Lifted Wires

The log is printed with sections for each type of procedure and the information to be logged. In general, the information includes the sequence number, the date issued, issued by, equipment and date released. Use black ink to fill in the information.

7 GENERAL SWITCHING

7.1 Application

General switching is performed when changing the position and status of high voltage electrical systems and devices.
General switching includes changes for:

a. Emergencies;
b. Maintenance;
c. Preparation for placing a clearance;
d. Testing;

e. Changes in operating conditions; and
f. Restoration to normal operating conditions.

7.2 Procedures

A switching program form shall be prepared for each application of general switching. Standard switching procedures for typical general switching requirements are available in Content Server. Any deviations from the typical switching procedure will need to be written and approved by the Maintenance Supervisor or the Electrical Safety Program Administrator. A high voltage switchman will perform the general switching procedure as directed by the Maintenance Supervisor and/or Electrical Safety Program Administrator. Locks and tags are not required for general switching. Refer to paragraph 7.3 below for rules pertaining to switching.

Completed switching program forms are filed at the facility and entered in the station log books.

7.3 Rules for Performing Switching

Start with the correct procedure and follow it exactly.

7.3.1 The Six Basic Steps of Switching

1. Carry the switching program form with you while switching;
2. Touch or point to the device identification nameplate to verify correct device;
3. Recheck the switching program form for correct device and sequence;
4. Verify anticipated device position;
5. Perform requested action on the device; and
6. Verify desired device position.

7.3.2 Verifying Device Position

a. Visually confirm all phases of a disconnect switch are fully opened or fully closed.
b. Check the operation indicators and disconnect blades for correct position on all phases of interrupter switches.
c. Check the position indicators on power circuit breakers for correct position, do not rely on indicating lights alone.
d. Assure motor operators are de-coupled and locked on motor-operated disconnect switches.
e. Assure manual operating handles are disabled or blocked and locked.

7.3.3 Stopping a Switching Procedure

The Switchman must stop, proceed no further, and consult with the Electrical Safety Program Administrator if any of the following conditions are encountered:

a. The instruction is not clearly understood;
b. The instruction appears to be incorrect;
c. An unexpected protective relay, breaker or other action occurs;
d. A device is found in a position other than indicated on the switching program form.
e. It is determined that by performing a step, a dangerous condition could result.

Switching may proceed only after the corrected switching steps have been approved by the Administrator, Maintenance Supervisor and the Switchman.

7.3.4 Switching Capacitor Banks

a. At least 5 minutes must elapse between the de-energizing of a capacitor bank and the closing of its ground switch.
b. A capacitor bank must remain de-energized for at least 5 minutes before it is re-energized.
c. An additional 5 minutes must be allowed after the ground switch is closed before issuing a clearance permitting personal protective grounds to be installed.
d. The time required in c. above must be explicitly expressed on the switching program form.

8 SIMPLE LOCKOUT/TAGOUT PROCEDURE

8.1 Application

Simple lockout/tagout procedure is used when the following elements exist:

a. The equipment has a single energy source that can be readily identified and isolated; and
b. The isolation and locking out of that energy source will completely de-energize and deactivate the equipment; and
c. If the energy source is electrical, it must be less than 600 volts; and
d. The single hazard is not from engulfment in a confined space.

A written procedure is not required for simple lockout/tagout.

8.2 Procedure

8.2.1 Placing lockout/tagout:

An authorized switchman must place the lockout/tagout.

a. Complete a Job Hazard Analysis/Pre-Job Brief indicating a single source of hazardous energy exists.
b. Perform a normal shutdown of the equipment.
c. Operate the energy isolating device. Verify desired position of energy isolating device.
d. Use a multi-lock hasp on the energy isolating device if it will allow it. Apply a personal blue lock and two-part danger tag. Write “single source” on the tag where the clearance number is to be entered. A multi-lock hasp is recommended to allow multiple personal blue locks to be applied.
e. If the isolating device will not hold multiple locks, a single red lock may be used and personal blue locks applied to the lock box.
f. If the energy isolating device will not hold a lock, a single two-part danger tag may be used without the personal blue lock. Only one worker may work on the equipment in this case.
g. After applying lockout/tagout, verify absence of voltage or energy source has been blocked, restrained, relieved, disconnected or otherwise rendered safe.

8.2.2 Removing lockout/tagout:

a. After work is complete, prepare the equipment for operation by assuring covers are on, doors are closed, control settings are restored to normal, etc.
b. Remove the lock(s) and tag(s).
c. Operate the energy isolating device. Verify desired position.

d. If possible, perform a functional test to verify the equipment is working.
e. Return the lock to the lock cabinet and staple the two part tag together. Drop it in the tag receptacle.

8.2.3 Motor Room CO_2 System lockout/tagout:

For the purpose of performing routine visual inspections or operational check inside the motor rooms, use the following procedure:

a. Close the initial and delayed discharge valves for the unit motor room to be entered. The valves are clearly labeled with engraved plastic tags.
b. Lockout/tagout both valves using the blue personal locks and tags stored at the system. If a second person is entering the space, a second set of personal blue locks and two-part tags must be used with a lock multiplier on the valves.
c. Enter the motor room and perform the inspection.
d. Exit the motor room and assure the doors are closed and locked.
e. Assure there is not an alarm active on the system. If so, verify CO_2 has not been released and determine cause of alarm.
f. Remove the locks and tags from the initial and delayed discharge valves and leave them at the system.
g. Open the initial and delayed discharge valves.

9 SPECIFIC ENERGY CONTROL PROCEDURE

9.1 Application:

A specific energy control procedure (SECP) is a formalized and documented hazardous energy control process which allows workers to safely perform their assigned tasks. The SECP is a written procedure documenting the steps taken to isolate specific equipment or systems from sources of hazardous energy. SECP's are used when the following elements exist:

a. There are multiple hazardous energy sources (complex lockout/tagout); and
b. The procedure requires switching of equipment rated less than 600 volts; and
c. There is no hazard from engulfment in a confined space.

Note that an outage request may need to be approved by Water Control if the system to be worked on affects aqueduct or turnout capacity.
Depending on the job, multiple LO/TO procedures may be needed and must be coordinated.

9.2 Procedure for using an SECP

a. The Maintenance Supervisor or authorized designee references system drawings and standard operating procedures to assess hazardous energy exposure from all sources, and has determined that an SECP is required.
b. An outage request workflow may be required and is initiated by the planner and sent to the Maintenance Supervisor, then to Water Control for approval. Refer to Section 14 for details on the outage request process.
c. A pre-approved SECP for common tasks can be found in the facility Hazardous Energy Control folder in Content Server.
d. If a pre-approved SECP is not available, one must be created using either the blank SECP form or editing an existing pre-approved procedure.
e. The completed SECP document is reviewed and approved by an Authorized employee. It contains a step-by-step procedure that includes the following:

1. Instructions to operate each hazardous energy isolation device to its desired position.
2. Instructions to place lockout/tagout to each hazardous energy isolation device after its position has been verified.
3. Instructions to relieve any stored energy that might endanger personnel.
4. Instructions to remove lockout/tagout and restore the energy isolating devices to a desired state.

9.3 Placing the SECP

An Authorized Switchman must place the specific energy control procedure.

a. Perform a normal shutdown of the equipment.
b. Perform each step on the Switching for Placement (SFP) instructions.
c. Record initials, time, and date for each completed step.
d. The Job Supervisor “walks down” the SECP (verifies switching is correct) if he did not witness or perform the switching.
e. Job Supervisor performs appropriate tests to verify absence of voltage and verifies stored energy has been released. The equipment should be in an electrically safe work condition when complete.
f. Job Supervisor secures the lock set key(s) in the red lock box and places his blue lock and tag on the lock box latch.
g. The Job Supervisor records his name, time and date under “Procedure Issued To” on the form.
h. The SECP form is placed in a plastic sleeve and tie wrapped or locked to the red lock box.
i. Log the issuing of the SECP in the Operating and Record log books.

9.4 Working Under an SECP

a. A job hazard analysis and pre-job brief is conducted, including a review of the LO/TO provided, and documented on the JHA/PJB form prior to beginning work. All workers will be afforded the opportunity to walk down the SECP. After verifying the adequacy of the protection, all workers apply their personal blue locks and tags to the lock box. If protection is determined to not be adequate or the working conditions or status of the equipment has changed, the job supervisor must be contacted.
b. In the event of any changes to the working conditions or status of the equipment, the Job Supervisor will conduct a re-brief advising the workers of the changes.
c. Workers must maintain awareness of the protection perimeter while working.
d. Workers must advise the Job Supervisor immediately if a device is found in a position other than indicated on the SFP instructions; or a dangerous condition exists.

9.5 Personal (Blue) Lock Removal

Each worker is responsible for control of the key to his personal blue lock. When his work is completed, he removes his lock and tag from the red lockbox, returns the lock and key to the yellow lock cabinet, staples the two part tag together and deposits it in the tag receptacle.

Employees should be cognizant of their schedule and avoid leaving their lock in place when no longer working under that SECP. If the employee is not available to personally remove the lock, he may initiate the lock removal process by:

a. Contacting the Maintenance Supervisor to advise that he intends to have his personal lock removed from an SECP and will be sending his personal lock key.
b. Maintenance Supervisor receives the personal lock key and completes the process by removing the lock and tag from the clearance box and placing them in the lock cabinet and tag receptacle, respectively.
c. Alternatively, the Maintenance Supervisor can initiate the process by contacting the employee and requesting that he send his personal lock key.

If the personal lock key has not been relinquished and is not available, the Supervisor Lock Removal Procedure must be followed.

9.6 Removing the SECP

Following completion of the work, the Job Supervisor assures the equipment is prepared for operation: covers are on, doors are closed, control settings are restored to normal, tools and materials accounted for, etc. and all workers have removed their personal locks and tags.

a. Job Supervisor removes his personal lock from the lock box and records his name, time and date under “Procedure Released By”.
b. An authorized employee performs each step on the Switching for Removal form, recording his initials, time, and date for each completed step.
c. If possible, after switching for removal is complete, perform a functional test to verify the equipment is working.
d. Job Supervisor informs Water Control the equipment is back in service (if applicable).
e. Job Supervisor records the SECP release in the Operating and Record log books.

9.7 Transferring an SECP

If the Job Supervisor holding an SECP plans to leave the facility for an extended period of time, or otherwise needs to transfer his responsibility to another Job Supervisor, he must report to the Maintenance Supervisor and state his intention. The process to transfer an SECP is:

a. The Maintenance Supervisor designates a second Job Supervisor or himself to assume responsibility for the SECP.
b. The second Job Supervisor is issued the existing SECP. This is documented on the same SECP form. PPG placements remain, Special Work Permits are still active, workers personal locks remain in place and work continues under the SECP. The second Job Supervisor assumes responsibility for everything under the SECP.
c. The first Job Supervisor releases the SECP and removes his personal lock and tag.
d. The second Job Supervisor places his personal lock on the lock box latch.

9.8 Transfer SECP Under Abnormal Conditions

In the event that the Job Supervisor becomes unavailable and can no longer be responsible for the SECP, the process is as follows:

a. The Job Supervisor’s supervisor shall make all reasonable efforts to contact him and inform him that the SECP will be transferred and he will be released as the Job Supervisor.
b. The Job Supervisor’s supervisor designates a second Job Supervisor or himself to assume responsibility for the SECP.

c. The SECP is transferred to the new Job Supervisor per the process described in section 9.6.
d. Next, the Supervisor Lock Removal process (Section 11) is initiated to remove the original Job Supervisor's personal lock and tag.
e. After completing the lock removal process, the new Job Supervisor places his personal lock and tag on the lock box latch to complete the transfer and assume all responsibilities.
f. If the original Job Supervisor was not able to be contacted regarding the transfer, he must be informed by his supervisor as soon as possible upon returning to work.

10 CLEARANCES

10.1 Application

A Clearance is a formalized and documented hazardous energy control process which allows workers to safely perform their assigned tasks. The clearance is a written procedure documenting the steps taken to isolate specific equipment or systems from sources of hazardous energy. Clearances should not be used as an out of service condition when no work is being performed. Clearances are used when at least one of the following elements exist:

a. The procedure requires switching and lockout / tagout of equipment rated greater than or equal to 600 volts; or
b. There is a hazard from engulfment in a confined space; or
c. Lockout / tagout is required for an interconnected system.

Note that an outage request will need to be approved by Water Control if the system to be worked on affects aqueduct or turnout capacity.
Depending on the job, multiple LO/TO procedures may be needed and must be coordinated.

10.2 Clearance Procedure

a. The Maintenance Supervisor or authorized designee references system drawings and standard operating procedures to assess hazardous energy exposure from all sources, and has determined that a clearance is required.
b. An outage request workflow is initiated by the planner and sent to the Maintenance Supervisor then to Water Control for approval. Refer to Section 14 for details on the outage request process.
c. After approval, Electrical Safety Program Administration or Water Control drafts the clearance procedure.
d. The draft clearance is saved in Content Server and linked to CLEAT (Clearance Log Entry and Tracking). A unique sequence number is automatically created at that time.
e. Job Supervisor and Maintenance Supervisor review the draft clearance procedure. Needed edits are made by Electrical Safety Program Admininistrator or Water Control.
f. The completed clearance document contains a step-by-step procedure that includes the following:
    1. Instructions to operate each hazardous energy isolation device to its desired position.

2. Instructions to place lockout/tagout to each hazardous energy isolation device after its position has been verified.
3. Instructions to relieve any stored energy that might endanger personnel.
4. Instructions to remove lockout/tagout and restore the energy isolating devices to a desired state.

10.3 Placing the Clearance

An authorized employee must place the clearance. If the placement requires switching equipment rated 600 volts or greater, an Authorized High Voltage Switchman must perform those steps.

a. Perform a normal shutdown of the equipment.
b. Perform each step on the Switching for Placement (SFP) form.
c. Record initials, time, and date for each completed step.
d. The Job Supervisor “walks down” the clearance (verifies switching is correct) if he did not witness or perform the switching.
e. Job Supervisor performs appropriate tests to verify absence of voltage on accessible equipment and verifies stored energy has been released.
f. The Job Supervisor secures the lock set key(s) in the red lock box and places his blue lock and tag on the lock box latch.
g. The Job Supervisor calls Water Control to be issued the clearance. He then records his name under “Clearance Issued To”, the Water Control Dispatcher’s name under “Clearance Issued By”, the time and date on the clearance form.
h. The clearance form is placed in a plastic sleeve and tie wrapped or locked to the red lock box.
i. Log the issuing of the clearance in the Operating and Record log books. The Water control dispatcher logs the issuance in CLEAT.

10.4 Working Under the Clearance

a. Job Supervisor performs appropriate tests to verify absence of voltage and place personal protective grounds on equipment that was not accessible prior to the clearance being issued. The equipment should be in an electrically safe work condition when complete.
b. Placement and removal of personal protective grounds (PPG) is documented on the clearance form, and in CLEAT and entered in the Operating Log. Removal or Transfer of PPG is required prior to releasing the clearance.
c. A job hazard analysis and pre-job brief is conducted, including a review of the LO/TO provided, and documented on the JHA/PJB form prior to beginning work. All workers will be afforded the opportunity to walk down the clearance. After verifying the adequacy of the protection, all workers apply their personal blue locks and tags to the lock box. If protection is determined to not be adequate or the working conditions or status of the equipment has changed, the job supervisor must be contacted.
d. In the event of any changes to the working conditions or status of the equipment, the Job Supervisor will conduct a re-brief advising the workers of the changes.
e. Workers must maintain awareness of the protection perimeter while working.
f. Workers must advise the Job Supervisor immediately if a device is found in a position other than indicated on the Switching For Placement; or a dangerous condition exists.

10.5 Personal (Blue) Lock Removal

Each worker is responsible for control of the key to his personal blue lock. When his work is completed, he removes his lock and tag from the red lockbox, returns the lock and key to the yellow lock cabinet, staples the two part tag together and deposits it in the tag receptacle.

Employees should be cognizant of their schedule and avoid leaving their lock in place when no longer working under that clearance. If the employee is not available to personally remove the lock, he may initiate the lock removal process by:

a. Contacting the Maintenance Supervisor to advise that he intends to have his personal lock removed from a clearance and will be sending his personal lock key.
b. Maintenance Supervisor receives the personal lock key and completes the process by removing the lock and tag from the clearance box and placing them in the lock cabinet and tag receptacle, respectively.
c. Alternatively, the Maintenance Supervisor can initiate the process by contacting the employee and requesting that he send his personal lock key.

If the personal lock key has not been relinquished and is not available, the Supervisor Lock Removal Procedure must be followed.

10.6 Removing the Clearance

Following completion of the work, the Job Supervisor assures personal protective grounds have been removed or transferred, the equipment is prepared for operation: covers are on, doors are closed, tools and materials accounted for, etc. and all workers have removed their personal locks and tags.

a. Job Supervisor calls Water Control, verifies that all workmen are clear, Special Work Permits released or transferred, PPG removed or transferred, and releases the clearance to the operator. He documents this under “Clearance Released By” and “Clearance Released To”, time and date. Water control dispatcher records release in CLEAT.
b. Job Supervisor removes his personal lock from the lock box.
c. The Job Supervisor or other authorized employee performs each step on the Switching for Removal form, recording initials, time, and date for each completed step.
d. Job Supervisor records the clearance release in the Operating and Record log books.
e. In most cases, a major or minor walkthrough, as found in the plant SOP, is required to verify the equipment is ready to be returned to service.
f. Job Supervisor informs Water Control the equipment is available.

10.7 Transferring a Clearance (Identical Clearance)

If the Job Supervisor holding a clearance plans to leave the facility for an extended period of time, or otherwise needs to transfer his responsibility to another Job Supervisor, he must report to the Maintenance Supervisor and state his intention. The process to transfer a clearance is:

a. The Maintenance Supervisor designates a second Job Supervisor or himself to assume responsibility for the clearance.
b. The second Job Supervisor requests and is issued an identical clearance from Water Control. The original clearance is numbered CCYEAR - SEQ# - 0, the identical clearance is numbered -1. This is documented on the same clearance

form. PPG placements remain, Special Work Permits are still active, workers personal locks remain in place and work continues under clearance -1. The second Job Supervisor assumes responsibility for everything under the original clearance.

c. The first Job Supervisor releases the original clearance immediately following issuance of the identical clearance. The release is accomplished the same way as a normal release with the exception that Water Control does not require him to confirm workmen are clear, PPG removed and Special Work Permits released. Responsibility for these was transferred to the new Job Supervisor in the previous step. He removes his personal lock and tag.
d. The second Job Supervisor places his personal lock and tag on the lock box latch.

10.8 Transfer Under Abnormal Conditions (Identical Clearance)

In the event that the Job Supervisor becomes unavailable and can no longer be responsible for the clearance, the process is as follows:

a. The Job Supervisor's supervisor shall make all reasonable efforts to contact him and inform him that the clearance will be transferred and he will be released as the Job Supervisor.
b. The Job Supervisor's supervisor designates a second Job Supervisor or himself to assume responsibility for the clearance.
c. The clearance is transferred to the new Job Supervisor per the process described in section 10.7.
d. If the original Job Supervisor can be contacted, he releases the clearance per the process described in section 10.7.
e. If the original Job Supervisor is unavailable, his supervisor contacts Water Control to accomplish the release.
f. Next, the Supervisor Lock Removal Process (Section 11) is initiated to remove the original Job Supervisor's personal lock and tag.
g. After completing the lock removal process, the new Job Supervisor places his personal lock and tag on the lock box latch to complete the transfer and assume all responsibilities.
h. If the original Job Supervisor was not able to be contacted regarding the transfer, he must be informed by his supervisor as soon as possible upon returning to work.

10.9 Change of Protection Perimeter

This procedure only applies to situations where the worksite must remain isolated from hazardous energy but the protection perimeter is changed.

The procedure to change the protection perimeter is as follows:

a. The Job Supervisor references system drawings and standard operating procedures to assess hazardous energy exposure from all sources, and has determined that a change in the protection perimeter is required.
b. Electrical Safety Program Administrator drafts the clearance procedure per the Job Supervisor's request.
c. The draft clearance procedure is reviewed and approved by the Job Supervisor and at least one other Authorized worker.
d. Electrical Safety Program Administrator edits the Switching for Removal steps on the existing clearance to indicate lock and tag removal only on the energy isolating devices that will remain under the new clearance. Job Supervisor reviews and approves edits.

e. New clearance is placed using new locks and tags. Water Control issues it to the Job Supervisor.
f. If personal protective grounds are in place, the Job Supervisor documents the transfer by entering the new clearance number in the Removed or Transferred box on the original clearance form. He documents the placement of the grounds on the new clearance form. Both actions are logged in the plant operating log and in CLEAT.
g. If a Special Work Permit has been issued, the Job Supervisor documents its transfer to the new clearance. This is described in Section 13.
h. Workers transfer their personal locks with new tags to the new clearance.
i. Job Supervisor releases the original clearance to Water Control.
j. Original clearance is removed using edited Switching for Removal.

10.10 Tests and Operation of Equipment within the Perimeter of a Clearance

Equipment that is not locked or tagged may be operated within the perimeter of the clearance. The Job Supervisor is responsible for seeing that the equipment is safe to operate, workers are aware it is being operated and are in the clear.

Test equipment that is a source of hazardous energy (such as Doble testing) may be used within the perimeter of the clearance. Prior to starting testing:

a. Obtain permission from the Job Supervisor to conduct the tests.
b. Job Supervisor assures workers are informed of the equipment to be energized and are clear.
c. If personal protective grounds must be relocated, this must be documented on the clearance form and in the Operating Log.
d. Barricade the area around the equipment to be tested.
e. At least two people are required to conduct Doble tests and monitor the area while testing is underway. A single worker may perform other types of testing if he has complete control of the area exposed to hazardous energy.
f. After testing is completed, assure equipment is de-energized before removing barricades.
g. Inform Job Supervisor testing is completed.

11 SUPERVISOR LOCK REMOVAL

11.1 Application

The Job Supervisor should monitor the workers' schedules to avoid needing to remove a lock left by an absent worker. Workers should also be cognizant of their schedules and avoid leaving a lock in place when no longer working under that clearance. A worker who discovers he has left a lock on after leaving the site should be proactive and contact the Job Supervisor and the supervisor of the lock to affirm that his lock may be removed and that he will be sending the key. The Supervisor Lock Removal Process must be followed when all of the following conditions exist:

a. Work under the LO/TO procedure has been completed and;
b. The worker with a personal lock applied to the LO/TO procedure is unavailable and;
c. The system needs to be returned to service and cannot be delayed to obtain the worker's personal key.

Each plant and group of checks and turnouts has a master key for the personal locks assigned to the facilities. The supervisor who owns the locks is responsible for securing and maintaining exclusive control of the master key(s). The master key may only be used to remove a personal lock after the approval process is completed. A copy of each master key is kept by Electrical Safety Administration.

11.2 Procedure

a. The Job Supervisor contacts the supervisor in charge of the lock to advise that a personal lock belonging to an individual who is unavailable requires removal.
b. The supervisor in charge of the lock contacts the individual's supervisor to request approval to remove the lock.
c. The individual's supervisor attempts to contact him and advise that his personal lock will be removed and that he is no longer protected. The individual should advise of any abnormal conditions that existed when he last worked on the system.
d. The individual's supervisor informs the supervisor in charge of the lock that contact was or was not made. If unable to contact the individual or if abnormal conditions existed on the system, he may decline to approve the lock removal or require assurance that the abnormal condition has been resolved.
e. After the individual's supervisor has approved the lock removal, the individual's manager must be contacted for approval.
f. If the individual was not contacted, his manager or supervisor must assure he is informed of the lock removal before he returns to work at the facility.
g. After the verbal approvals have been obtained (individual's supervisor, individual's manager), the Supervisor Lock Removal Form workflow should then be initiated by the supervisor of the lock to document the communication and approvals.
h. When the supervisor of the lock receives the workflow form, he signs, then prints a copy before submitting the form for the individual's signature when he returns to work. The copy should be filed with the hardcopy of the clearance.
i. After the three approvals (individual's supervisor, individual's manager and supervisor of the lock) have been verbally obtained, the lock and tag may now be removed using the master key. If the master key is not available, the lock may be cut off.
j. The individual must return his personal key as soon as possible after returning to work and must sign the Supervisor Lock Removal Form.
k. The completed form is automatically saved in the Electrical Safety Program folder here.

11.3 Procedure for Contractor's Lock Removal

Refer to section 13 Operations with Non-CAP Forces.

The process for removing a contractor employee's personal lock should begin prior to releasing or transferring the Special Work Permit. The process is similar where the employee's supervisor is the Contractor's Representative and the manager approval will be by the CAP Project Manager.

a. The Contractor's Representative determines that his employee is unavailable. He should contact the employee if possible, to inform him of the lock removal and to have the key returned.
b. The Contractor's Representative informs the Job Supervisor and the supervisor of the lock that his employee is unavailable and will need to have the supervisor remove the lock.
c. The Supervisor Lock Removal form should be printed and manually filled out with the employee's name and the Contractor's Representative as the employee's supervisor.
d. The form is faxed or scanned and emailed to obtain the CAP Project Manager's signature where the employee manager signs. The signed form is returned to the

supervisor of the lock and filed with the clearance and Special Work Permit. The lock may then be removed.

e. If the contractor's employee returns to the facility, he must be informed of the lock removal (if not previously contacted), return the key and sign the form.
f. The completed form is sent to the Electrical Safety Program Administrator to be filed in Content Server here.

12 INTERCONNECTED SYSTEM CLEARANCES

12.1 Application

Interconnected system clearances (ICC) provide for the protection of personnel at points of interconnection between CAP and non-CAP facilities. An Interconnected System Clearance is a statement with documentation from one Operations Supervisor to another that switching has been performed on one system as a partial or complete requirement for a clearance on another system. The Operations Supervisor function at CAP is performed by the Water Control Supervisor or his designee (Water Control Dispatcher). The Operations Supervisor function for a non-CAP system is typically a power dispatcher.

12.2 Issue an Interconnected System Clearance (ICC)

A non-CAP system requires protection on the CAP system (Interconnected System Clearance).

a. The non-CAP Operations Supervisor will request the appropriate required protection on the CAP system. That request is in the form of an email to the Water Control Supervisor with a copy to Electrical Safety Program Administration.
b. Water Control Supervisor negotiates the schedule for the requested outage.
c. Electrical Safety Program Administrator prepares a CAP clearance procedure and an ICC procedure for the requested protection. The draft CAP clearance procedure is reviewed by requestor, either by phone or emailed procedure, depending on complexity.
d. Maintenance Supervisor is informed of clearance request and also reviews draft procedure.
e. The clearance is sent to the Maintenance Supervisor to be placed and issued to his designee. This follows the same clearance placement process.
f. Water Control Supervisor uses three-part communication to state clearly to the non-CAP Operations Supervisor exactly what protection has been provided. The non-CAP Operations Supervisor must restate the exact protection provided and state that he is satisfied the protection meets the requirements. The Water Control Supervisor must confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood.
g. Water Control Supervisor Issues the ICC to the non-CAP Operations Supervisor.
h. The ICC issuance is logged in CLEAT.

12.3 Receive Interconnected System Clearance (EICC)

CAP requires protection on a non-CAP system (External Interconnected System Clearance).

a. The standard clearance request process is followed where protection is required on a non-CAP system.

b. The Electrical Safety Program Administrator will request the appropriate protection on the non-CAP system. The request is by email to the non-CAP outage coordinator.
c. Non-CAP outage coordinator emails draft procedure for our approval.
d. Following our approval, non-CAP outage coordinator informs non-CAP Operations Supervisor of outage request. Outage is scheduled.
e. ESP Administrator saves non-CAP switching procedure as an External Interconnected System Clearance (EICC) in Content Server. A new EICC is logged into CLEAT that links to the non-CAP switching procedure.
f. ESP Administrator drafts an associated CAP clearance that includes the step "Verify EICC-YEAR-SEQ# issued to CAP". This clearance number is noted in the EICC log under "Aliases, if any".
g. On the scheduled day, the non-CAP Operations Supervisor uses three-part communication to state clearly to the Water Control Supervisor exactly what protection has been provided. The Water Control Supervisor must confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood. The Water Control Supervisor then receives the EICC from the non-CAP Operations Supervisor.
h. Water Control Supervisor logs the received EICC in CLEAT.
i. CAP Job Supervisor places the CAP clearance associated with the EICC.

12.4 Release of Interconnected System Clearance

The release of the Interconnected System Clearance will be initiated by the appropriate Operations Supervisor.

For an ICC:

a. The non-CAP Job Supervisor determines work is complete and all workers are in the clear.
b. He contacts the non-CAP Operations Supervisor to release the ICC.
c. The non-CAP Operations Supervisor using three part communication states which ICC he is releasing. CAP Water Control Supervisor confirms the ICC is being released. If the restatement is incorrect, the process will be repeated until the ICC release is correctly understood.
d. Water Control Supervisor logs the ICC release in CLEAT, then calls the Job Supervisor to release the associated clearance. Water Control Supervisor logs the associated clearance release in CLEAT.
e. Job Supervisor removes the clearance and restores the system. He logs the release in the plant log books.

For an EICC:

f. The CAP Job Supervisor determines work is complete and all workers are in the clear.
g. He contacts Water Control Dispatcher to release the CAP clearance and documents this on the clearance form. Dispatcher logs release in CLEAT, Job Supervisor removes the clearance and logs the release in the plant log books.
h. Job Supervisor advises Water Control Supervisor that switching is complete and the EICC can be released.
i. Water Control Supervisor contacts non-CAP Operations Supervisor to initiate EICC release. Using three part communication, he states which non-CAP ICC he is releasing. The non-CAP Operations Supervisor confirms the non-CAP ICC to be released. If the restatement is incorrect, the process will be repeated until the ICC release is correctly understood.

j. Water Control Supervisor logs the EICC release in CLEAT.

12.5 Interconnected System General Switching and Hot Line Orders

General Switching Request for Mark Wilmer:

a. Mark Wilmer requires the 230 kV feed from Parker Dam (PAD-HAV line) be de-energized in order to perform switching on the high voltage distribution system in the plant or in the switchyard.
b. ESP Administrator emails a general switching request to WAPA to de-energize the PAD-HAV line for approximately 2 hours. The request must be made 4 weeks in advance for a scheduled event.
c. Prior to de-energizing the line at the scheduled time, WAPA confirms with Water Control that they may proceed with switching.
d. After plant switching is completed, the plant Job Supervisor contacts Water Control advising that switching is complete and the line may be re-energized.
e. Water Control Dispatcher contacts WAPA to have the line re-energized.

External Hot Line Order:

f. Non-CAP system requires assurance that any possible backfeed is disabled. Can be formal request (email) or phone call.
g. ESP Administrator prepares clearance form in CLEAT to disable and tag only automatic switching of station service feed or generator.
h. Job Supervisor places clearance on scheduled day.
i. Non-CAP system Operations Supervisor contacts Water Control to receive no backfeed assurance. No ICC is issued because nothing was de-energized.
j. In the event of a line trip, if station service was placed in manual or local mode and tagged, plant personnel will need to manually switch by first opening the normal feed breaker, the generator is running and then manually closing the generator feed breaker. Assurance of no backfeed is still accomplished because the normal feed breaker is assured to be open.
k. Twin Peaks and Sandario cannot be manually switched, so station service can only be restored if the Hot Line Order is released or the transmission line is re-energized.
l. Non-CAP system Operations Supervisor informs CAP Water Control that hot line order is released.
m. Water Control advises Job Supervisor that hot line order is complete and clearance can be released. Water Control logs release in CLEAT.
n. Job Supervisor removes clearance and re-enables system. Release is entered on the document and in plant log books.

12.6 Interconnected Systems without LO/TO Programs (Water Users)

These are situations where a water user lacks a formal lockout/tagout program, so an interconnected system clearance (ICC) procedure cannot be applied.

12.6.1 CAP LO/TO Applied to Water User's Devices

CAP requires protection on a non-CAP system. CAP Water Control coordinates with the water user for access to the hazardous energy isolating devices. The clearance switching instructions will include the non-CAP system devices and CAP switchman will apply lockout/tagout on them.

12.6.2 Water User Requires LO/TO on CAP Devices

Water user personnel require LO/TO on CAP equipment for their protection. CAP Water Control receives request from water user asking for protection on CAP

hazardous energy isolating devices. Water Control contacts maintenance supervisor to initiate outage request. After the clearance is placed, the maintenance supervisor contacts the water user and has him place a blue lock on the lock box. He includes a contact number on the two-part tag along with the other information. The clearance remains in place until all locks are removed and the normal procedure for release and removal is followed.

13 OPERATIONS ASSOCIATED WITH NON-CAP FORCES

13.1 Application

This chapter defines procedures used for non-CAP forces performing work in CAP facilities. Examples of non-CAP forces are contractors, vendors, non-CAP interconnected system personnel, Bureau of Reclamation personnel and other government agencies having responsibilities related to CAP. For the purposes of this chapter, the term “contractor” applies to all non-CAP forces. Work is defined as construction, maintenance or testing on or near CAP equipment.

13.2 Special Work Permit

Where the work performed by a contractor requires a lockout/tagout procedure to be established, a Special Work Permit is required to authorize the contractor to proceed with the work.

A Special Work Permit is a statement that the contractor and the CAP Representative have discussed the work to be done, reviewed the protection provided for adequacy, and defined the perimeter and conditions of the safe working area.

If multiple LO/TO procedures are needed for the work, they can be documented on a single permit. In other cases, multiple permits, each with one LO/TO procedure listed, may be used. The difference is that if the work requires a staged removal of LO/TO procedures, multiple permits must be used (control power locked out on an SECP may need to be restored for functional testing before the work is completed). If the work will be completed without needing to stage LO/TO removal (all removed at once), a single permit listing multiple LO/TO may be used.

13.2.1 Issuing a Special Work Permit

a. The CAP Representative contacts the Maintenance Supervisor and advises that a contractor is scheduled to work in his facility. If support is required from the area crew, he will create a work order. The information provided on the work order will include the equipment to be worked on, scope of work, work schedule and expected duration.
b. The Maintenance Supervisor designates the Job Supervisor for the requested outage. They determine the appropriate LO/TO procedure needed for the work.
c. An outage request may be required if the work affects available capacity. Follow the process for placing the appropriate LO/TO procedure on the agreed upon schedule.
d. The designated CAP Representative prepares the Special Work Permit form. If multiple LO/TO procedures are placed, all must be documented on a single or separate Special Work Permits as explained above. The CAP

Representative monitors the contractor's work and signs Special Work Permits.

e. Prior to the start of work, the Job Supervisor, CAP Representative and Contractor's Representative meet to review the Special Work Permit and the LO/TO procedure(s) in place.
f. After assuring the Contractor's Representative understands the worksite conditions, the protection provided, and agrees to its adequacy, the CAP Representative and the Contractor's Representative sign the Special Work Permit. This is entered into the plant log books as being "issued" by either the CAP Representative or the Job Supervisor. If the LO/TO procedure is a clearance, Water Control is contacted and logs that it's been issued in CLEAT.
g. The Contractor's Representative and his crew then places personal blue locks and two-part tags (furnished by CAP) on the red lock box. Contact numbers should be included on the two-part tag information for contractor personnel.

13.2.2 Dive Operations Special Work Permit Procedure

For dive operations, the Special Work Permit is created and administered by Water Control. These Special Work Permits are managed in CLEAT. The Special Work Permit is signed by the CAP and Contractor Representatives and issued at the site. See paragraph 13.3 for details on dive operations.

13.2.3 Transferring a SWP for a Change in Protection Perimeter

A Special Work Permit can be transferred to a new clearance procedure when a change is made to the protection perimeter. This only applies to situations where the worksite must remain isolated from hazardous energy but the protection perimeter is changed. For this situation only, the transfer can be accomplished without releasing the SWP.

a. The Job Supervisor and CAP Representative review the change in perimeter with the Contractor's Representative and assure he is satisfied with the adequacy of the protection.
b. The new clearance procedure is placed and issued in accordance with the defined procedures in chapter 10.
c. The CAP Representative or Job Supervisor documents the new clearance procedure on the SWP form.
d. The Job Supervisor documents SWP transfer on the original clearance form.
e. The Contractor's Representative acknowledges the transfer by signing the form.
f. The Job Supervisor adds the SWP to the new clearance form. Water Control is contacted and logs the transfer and addition in CLEAT.
g. The Contractor's Representative and his crew transfer their personal locks with new tags to the new lock box.

13.2.4 Releasing a Special Work Permit

a. When the progress of work has reached a point where there is no longer a need for a LO/TO procedure to provide protection for the contractor's workers, the SWP may be released.
b. Contractor employees remove their blue locks and tags.
c. Contractor's Representative advises the CAP Representative that he wants to release the SWP and the protection can be removed.

d. Contractor's Representative and the CAP Representative sign the release section of the SWP.
e. The CAP Representative enters the SWP release into the plant log books and, if a clearance was placed, informs Water Control that the SWP has been released.
f. Job Supervisor releases and removes the LO/TO procedure.

13.2.5 Transfer of Contractor Representative

If the Contractor Representative on the SWP is replaced by another, this should be documented using the following procedure:

a. The new Contractor Representative name is recorded in the SWP Issued To box on the LO/TO form along with the time and date. The same SWP number is used.
b. The original Contractor Representative name is recorded in the SWP Released/Transferred box along with the time and date, on the LO/TO form. Check the Transferred Box.
c. The transfer date and new Contractor Representative is recorded on the Special Work Permit form.

13.3 Dive Operations

When the work involves dive operations, clearances required are placed and issued to the area Job Supervisor. As noted in paragraph 13.2.2, special work permits are administered by Water Control in CLEAT. The inspector (CAP Representative) contacts Water Control when divers enter and exit the water. Water Control logs these times.

a. For dive operations in proximity to pumping plant unit inlets, minimum protection requires the unit where the dive is performed and the two units on either side be under clearance.
b. For canal dives, the conditions can range from full flow to no flow depending on the work performed. This can be managed using clearances or operational constraints or a combination based on the job requirements.

13.4 Contractor Work not Requiring a LO/TO Procedure

For work not requiring protection from hazardous energy, a Special Work Permit is not needed. A job hazard analysis and pre-job brief is required. Construction contractors are required to have their own safety program which is reviewed through the Purchasing, Safety and Project Management departments.

For activities not associated with work, such as pre-bid inspections or tours, a safety briefing should be conducted by the CAP employee escort prior to conducting the tour.

13.5 Contractor Administered LO/TO Procedures

Where a system is owned and controlled by a contractor, or control of a system has been relenquished by the CAP asset owner supervisor to a contractor, the contractor may elect to use his own LO/TO program. This might typically occur during system testing, commissioning or maintenance. The requirements are:

a. CAP operations are not affected by the contractor's placement or removal of his LO/TO procedure
b. The contractor has a LO/TO program included in his overall safety plan.
c. The system has its own energy isolating device(s) and is connected to hazardous energy source(s).

d. The contractor's energy isolating devices provide sufficient protection for his personnel (they are not exposed to hazardous energy controlled by CAP).
e. CAP personnel do not require protection by the contractor's LO/TO procedure.
f. Contractor personnel perform the switching for placement and removal using CAP locks and tags or contractor locks and tags, whichever is preferred. Contractor tags must have the name of the individual controlling the lock.

Where a Special Work Permit was issued and released prior to the contractor applying his own LO/TO, a new SWP is not needed. If control of the system is relenquished with no CAP LO/TO procedures placed, a Special Work Permit should be issued noting that the contractor's LO/TO procedures will be used. This latter case would be typical for elevator maintainance or other similar situations.

14 OUTAGE REQUESTS

14.1 Purpose

Water Control approval is required for planned outages on systems that impact capacity. An outage request is a workflow process initiated by the planner to obtain that approval. Every planned clearance requires an outage request, with the exception of Headquarters and breakdowns, but not every outage request will require a clearance. Although the outage request process is not managed as part of the Hazardous Energy Control Program, it is documented here because of its close association with clearances.

14.2 Procedure

a. As part of the work order planning process, the planner must initiate an outage request to obtain approval from Water Control before scheduling work requiring an outage. The outage request should include hazardous energy assessment information needed by the Electrical Safety Administrators to create the clearance procedure (step e).
b. When the request is initiated, an email is automatically sent to the Electrical Safety Program Administrators and Water Control that an outage has been requested.
c. The request is routed for approvals (based on who was marked as an approver), ending with approval by Water Control.
d. The approved request is automatically saved to the outage approvals folder in Content Server and a notice is emailed to the Electrical Safety Program Administrators.
e. The Electrical Safety Program Administrators develop the clearance switching procedure based on the information in the approved outage form and in consultation with the Maintenance Supervisor or his authorized designee.
f. The final approved clearance switching procedure is filed in Content Server and linked into the Clearance Log Entry and Tracking (CLEAT) system.

15 CLEARANCE LOG ENTRY AND TRACKING (CLEAT)

15.1 Purpose

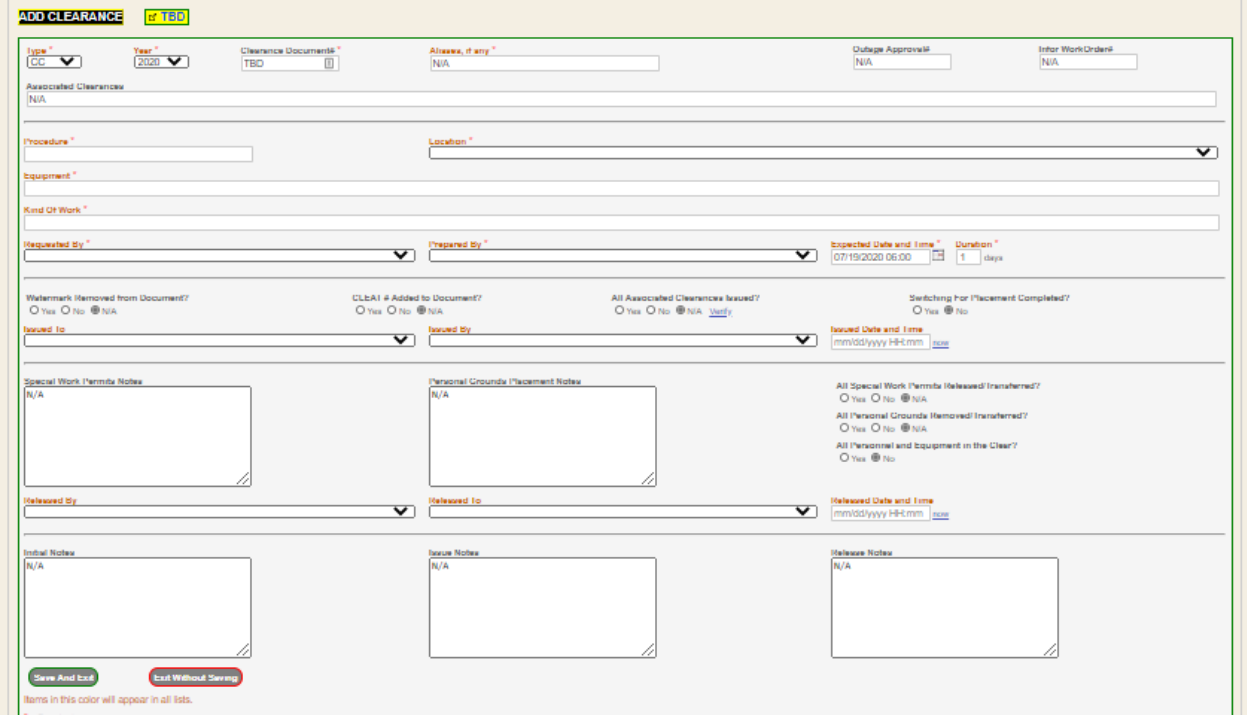
CLEAT is a web-based clearance log and document management system that facilitates the process of requesting, approving, issuing and releasing clearances. Because it is web-based, clearance information such as status, schedule, switching forms and

planned job supervisor is available from any CAPnet computer through the Maintenance Management Dashboard (MMD).

15.2 Log Entries

Clearance information is logged in CLEAT by the Electrical Safety Program Administrators and Water Control Dispatchers. The data entry screen is shown below and is accessible only to those employees. All required information must be entered to save the document. Information must be correctly entered regarding Special Work Permits and Personal Protective Grounds in order to release a clearance. The clearance form saved in Content Server is linked to CLEAT by entering the document number in the "Clearance Document #" field. Clearances are associated with ICC's by entering the ICC number in the "Aliases, if any" field. Typically the Electrical Safety Program Administrators fill in the top section and the Water Control Dispatchers fill in the Issued and Released sections.

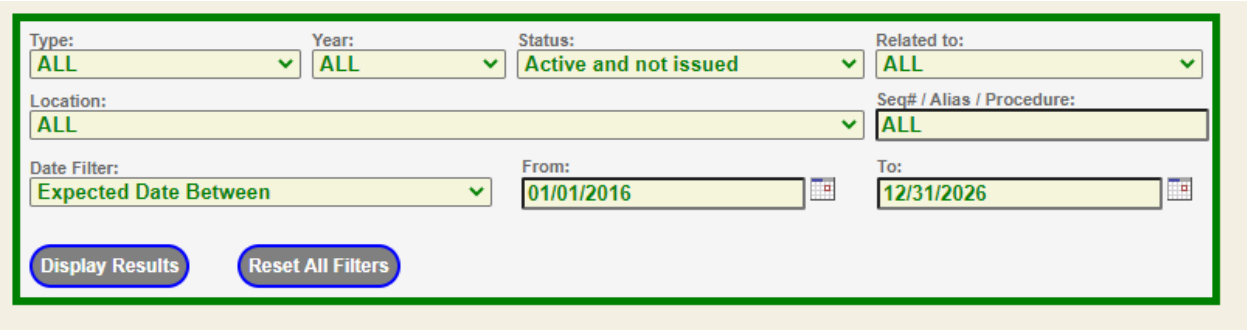
There are six name fields with pull-down lists: Requested by, Prepared by, Issued to/by, and Released by/to. The list of available names for each field comes from the managed lists of HECP authorized employees which is maintained by the Electrical Safety Program Administrators. Employees on the list are designated for their authorized functions; for example, the "Issued to" list is composed of authorized job supervisors. The "Requested by" list contains all the maintenance supervisors that require clearances (as opposed to only SECP's) and their managers. Managers are substituted when the maintenance supervisor is unavailable in the event of a call-in clearance.



15.3 Using CLEAT

15.3.1 Filter Box

Use the Filter box to specify what clearances you want to view. Pull-down menus are provided for most fields to facilitate selections. Click on Display Results to apply the selected filters



15.3.2 Printing Clearances

Click on the printer icon on the far right of the desired clearance. Select the printer in the dialog that pops up. Select a pdf converter if you only intend to view the document. The pdf file will have to be saved on your computer.

15.3.3 View Managed Lists

There are three managed lists that can be viewed.

a. **User Access Control** lists personnel that have functional responsibilities in the HECP.
   A – Administrator
   C – Control Center
   P – Preparer
   R – Requestor
   T- Control Center Trainee
b. **ICC Agencies** lists the acronyms for interconnected systems.
c. **Job Supervisor & H.V. Switchmen** lists Authorized personnel who may hold SECP's and perform the required switching; hold clearances and perform the required switching (except high voltage); perform high-voltage switching and place personal protective grounds for the locations and systems listed. Maintenance supervisors wishing to add or remove their employees from this managed list or edit locations must contact an Electrical Safety Program Administrator.
d. **Authorizing H.V. Switchmen** – New employees who have completed HECP and on-the-job training and demonstrated to their supervisor their ability to perform high voltage switching in their assigned locations can be authorized using this workflow form: High Voltage Switchmans Evaluation Request Form.

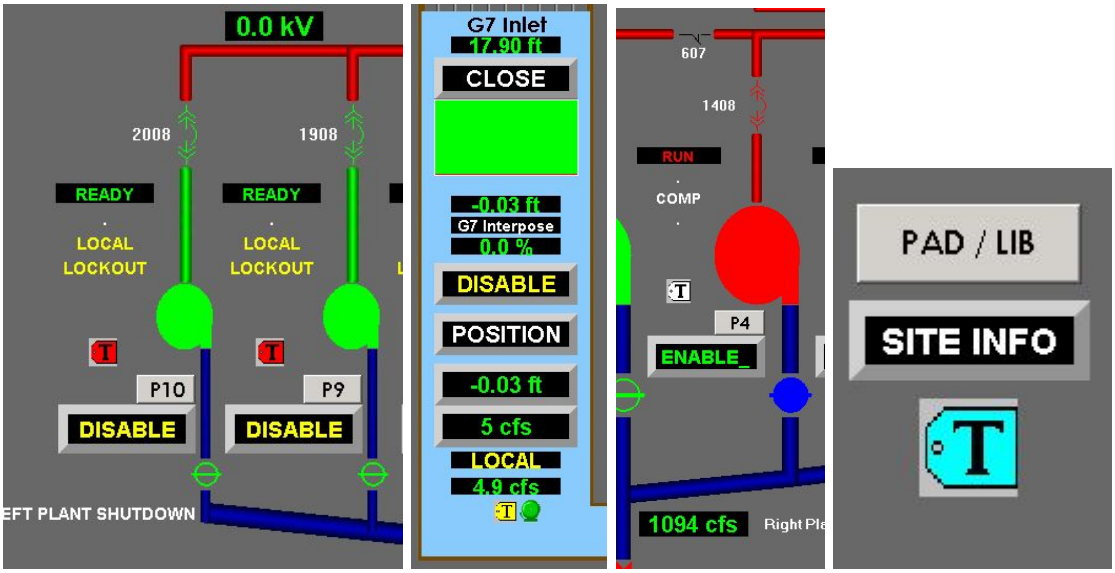
15.3.4 Outage Requests

This button links to the folders in Content Server where approved outage requests are filed. The requests are sorted by year. The list in each year folder may be filtered using the location code for the outage. Requests not filed in a year folder are pending action by the Electrical Safety Program Administrators.

16 SCADA TAGGING OF SUPERVISORY CONTROLLED EQUIPMENT

16.1 Supervisory Control Display

When a clearance, out of service or special condition is issued on equipment that is operated by a supervisory control system, the status of such equipment shall be indicated by means of an appropriate symbol on all displays that serve as supervisory control points. Examples of tagged displays are shown below:



Water Control Dispatchers apply and remove SCADA tags. The SCADA tags are necessary information for the dispatchers to operate the aqueduct system, so they must be informed when HECP tags are applied to supervisory controlled equipment. Examples of supervisory controlled equipment are: check gates, pumping units, turnout gates, recharge basin valves and trash rakes.

16.2 SCADA Tags

There are four types of SCADA tags. Each type is colored to match the HECP tag (with the exception of the information tag). Information associated with the tag is entered in a separate dialog box.

Red Clearance Tags: Clearance Number, Issued to and the Description of the work is recorded. The display screen indication and the SCADA tag **SHALL NOT BE RELIED UPON TO PROTECT** Workers.

Yellow Out of Service Tags: Tag number, Placed by and Description is recorded.

White Special Condition Tags: Tag number, Placed by and Description is recorded.

Cyan Information Tags: Information needed by the operator is recorded. There is no associated HECP tag for this.

17 OUT OF SERVICE CONDITION

17.1 Application

Out of Service locks and tags are used to alert personnel that a system or piece of equipment is not in service and should not be operated. An Out of Service condition is used to protect equipment only, and must not be used to protect workers. An example of an out of service condition might be a compressor with a failed PRV and is out of service until it can be replaced. An Out of Service condition is intended to be a temporary condition until equipment is repaired and restored to service or removed. Although there is no specified duration for an Out of Service, the condition should be evaluated periodically and resolved in a reasonable timeframe. For situations where the equipment will remain out of service for the forseeable future, it should be rendered inoperable in addition to placing the Out of Service lock and tag.

17.2 Procedure

When it is determined that equipment should be taken out of service, the procedure is:

a. The Maintenance Supervisor determines the appropriate energy isolating device or control device to be operated.
b. The appropriate personnel perform the isolation and apply a gold lock (if possible) and tag.
c. If the equipment is supervisory controlled, the Water Control Dispatcher is informed of the Out of Service condition so a SCADA tag can be applied. For equipment that is rendered inoperable, the SCADA tag will remain in place.
d. Placement of the Out of Service condition is logged in the plant record log book or the station operating log book.
e. No work that has hazardous energy exposure may be done on Out of Service equipment. A LO/TO procedure must be placed for that work.
f. After the equipment has been restored to service or removed, removal of the Out of Service is logged in the plant record log book or the station operating log book.

18 SPECIAL CONDITIONS

18.1 Application

The Special Condition is used to provide temporary special operating or limiting instructions for equipment in service. A Special Condition protects equipment only, it must never be used to protect personnel. An example of a Special Condition might be that the auxiliary hoist on the overhead crane should not be used, only the main hoist. A Special Condition tag shall not be used for permanent instructions. If the Special Condition will persist for an extended period, the condition for which it is providing temporary special operating or limiting instructions must be reviewed annually. Following the review, if the condition is to continue without permanent instructions, the tag must be replaced. The replacement Special Condition tag must be updated to reflect current date, equipment, operating conditions, instructions, and include in the remarks the date the original Special Condition tag was placed.

Any employee who observes equipment that is in a condition that may limit its operation shall report such condition to the Maintenance Supervisor as soon as practical. The Maintenance Supervisor shall determine if the special condition procedure is applicable and provide any necessary instructions.

18.2 Procedure

The Special Condition tag should provide the necessary operating instructions or limitations and be attached to the equipment control device or in a position that will be immediately obvious to anyone operating the equipment. Placement of all Special Conditions shall be logged in the plant record log book or the station operating log book. If the equipment is supervisory controlled, Water Control must be informed of the Special Condition.

When the Special Condition no longer exists, the removal of the Special Condition tag shall be entered in the plant record log book or the station operating log book. Advise Water Control of the removal if the equipment is supervisory controlled.

19 DEFINITIONS

Affected Employee - An employee who works under hazardous energy controls in order to perform servicing or maintenance on machinery or equipment. Also, an employee who works in or enters areas where the hazardous energy must be controlled to perform work safely. The Affected Employee is responsible for understanding the protection provided by the lockout/tagout procedure, maintaining control of the personal lock key and performing the work safely. The employee must be trained in the Hazardous Energy Control Program prior to working under a lockout/tagout procedure.

Authorized Employee - A person who has completed the required hazardous energy control training and is authorized to lockout or tagout a specific machine or equipment to perform service or maintenance. A person must have knowledge of the equipment and systems within his/her area of responsibility and be approved by their Maintenance Supervisor as an Authorized Employee in order to apply a lock or tag to control hazardous energy.

CAP Representative - A person who is designated at the facility to monitor contractor work and prepare and sign Special Work Permits. The person must be capable of determining the correct lockout/tagout procedures to be used for the work to be performed, monitoring the work and ascertaining the work has been completed.

Clearance - A statement with signed documentation from the Water Control Supervisor or his designee, to the Job Supervisor declaring that the equipment or system to be worked on has been isolated from each source of hazardous energy, as requested.

CLEAT – Clearance Log Entry and Tracking. See Section 15.

Complex Lockout/Tagout Procedure – A lockout/tagout procedure where there are multiple sources of hazardous energy and multiple energy isolating devices and/or multiple employers. Requires a written plan of execution that identifies the person in charge (Job Supervisor). Our program has two types of complex LO/TO procedures: Specific Energy Control and Clearances.

Contractor's Workplace Representative - As used in Special Work Permits, the Contractor's

Workplace Representative assesses the adequacy of the protection provided, certifies his work has been completed, that all shorts, jumpers and personal protective grounds are removed or accounted for and all contractor personnel and equipment are clear of the work area covered by the Special Work Permit before he releases it.

Control Center - A CAP facility that houses Water Control Dispatchers from which the aqueduct is remotely controlled. A location from which load scheduling and/or system switching functions are directed.

De-energized - Electrical – Free from any electrical connection to a source of voltage and from electrical charge; not having a potential different from that of the earth.
All other forms of energy – Disconnected from all energy sources and not containing residual or stored energy.

Electrical Hazard – A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or arc blast injury.

Electrical Safety – Identifying hazards associated with the use of electrical energy and taking precautions to reduce the risk associated with those hazards.

Electrical Safety Program Administrator – The persons who have been designated to manage the Hazardous Energy Control Program. Specific duties are listed in Section 2.

Electrically Safe Work Condition – A state in which an electrical conductor or circuit part has been disconnected from energized parts, locked/tagged in accordance with CAP hazardous energy control program, tested to verify the absence of voltage, and, if necessary, temporarily grounded for personnel protection.

Emergency – A situation in which facilities are in a condition as to be a hazard to the public, CAP personnel, or the CAP power or water system equipment.

Energized – Electrical - Electrically connected to a source of voltage, or is a source of voltage.
All other forms of energy - Connected to an energy source or containing residual or stored energy.

Energy Isolation Device – A physical device that prevents the transmission or release of energy. Includes, but is not limited to, manually operated circuit breakers, disconnect switches, slide gates, line valves, blocks, or similar devices capable of blocking or isolating energy. The term does not include push buttons, selector switches, or other control devices.

Energy Source – Any supply of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other energy.

Equipment (or System) – Any machine, device, or apparatus, either electrical or mechanical, used in relation to electric power and waterway control. This includes electrical circuits, transmission lines, piping, transmission, spillways, irrigation outlets, conservation facilities, pump stations, etc.

Exclusive Control - Continuously being in a position to prevent (exclude) other individuals from re-energizing the machine or equipment during a servicing or maintenance activity; for example, placement of a lock by an employee provides that employee exclusive control until the lock is

removed.

General Switching – Switching performed for line sectionalizing or system configuration changes for testing, changes in operating conditions or preparation for clearances. Does not require application of locks or tags, but usually requires an outage request.

Hazard – A source of possible injury or damage to health.

Hazard Assessment - An assessment of the workplace and work activities to identify if hazards are present or are likely to be present. If there is potential exposure to any chemical, physical, or biological agent which may have a detrimental effect a health hazard assessment may be required.

Hazardous Energy – Any energy source that may cause injury or death. Any energy, including mechanical (e.g., power transmission apparatus, counterbalances, springs, pressure, gravity), pneumatic, hydraulic, electrical, water, chemical, nuclear, and thermal energy that could cause injury to employees. A hazard is only present when energy may be released in quantities or at rates that could injure employees. Hazardous chemical energy, for the purposes of this standard, includes flammable and combustible liquids, flammable gases, acids, and alkaline chemicals that may thermally produce burn injury through high or low temperature, or are sufficient enough to displace oxygen and incapacitate employees.

Hazardous Energy Control Procedures – Procedures for the control of all hazardous energy, which are to be uniquely numbered and used only one time. Each procedure must be approved before being used. Previously prepared procedures may be used for reference only (templates). Procedures for the control of hazardous energy must include:

1) The intended use of the procedure;
2) Individual responsibilities;
3) Specific procedural steps for shutting down, isolating, blocking, and securing equipment (or systems) to control hazardous energy;
4) Specific procedural steps for the placement and removal of locks (tags); and
5) The requirements for testing the effectiveness of the energy control measures.

Each procedure shall be coordinated with any other hazardous energy control procedures if multiple procedures are in effect for the system being worked on to assure personnel safety.

Hazardous Energy Control Program (HECP) – The mandatory written program establishing coordinated and consistent procedures and operating criteria for the safe and reliable operation and maintenance of CAP facilities. The program establishes procedures for the control of hazardous energy for the safety of personnel.

High Voltage Switchman – An Authorized Employee designated by his Maintenance Supervisor, based on his knowledge of the equipment and procedures in his area of responsibility, to perform switching on electrical systems rated 600 volts or greater.

Hot Line Order – A statement with documentation from a Non-CAP Operations Supervisor to a Job Supervisor that the automatic reclosing is turned off and that the equipment covered by the hot line order will not be intentionally re-energized until contact has been made with the Job Supervisor holding the hot line order. For our purposes, we provide assurance to the Non-CAP Operations Supervisor issuing the HLO that we have disabled automatic switching in the event of a transmission line trip to prevent a backfeed onto the line.

Incidental Employee – An employee who does not require hazardous energy controls to be placed to perform his duties and is not authorized to work under a lockout/tagout procedure. Incidental employees receive HEC program awareness training.

Interconnected System: A group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which electric energy is transformed for delivery to customers or is delivered to other electric systems.

Interconnected System Clearance – A statement with documentation from one Operations Supervisor to another that switching has been performed on one system as a partial or complete requirement for a clearance on another system.

Isolated – An equipment state that physically prevents the transmission or release of energy.

Job Briefing (Pre-Job Brief) - A discussion conducted by the Job Supervisor with the Affected Employees, involved in the work to be performed, before they start each job, or when the scope of work changes. The job briefing must cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements normally found within the context of the Job Hazard Analysis.

Job Hazard Analysis (JHA): Written identification of potential hazards present or likely to be present in a workplace and their associated mitigation techniques. The responsible job supervisor, consulting with a safety or health professional if needed, assesses the workplace and work activities and determines the mitigation techniques.

Job Supervisor – An Authorized Employee who receives and releases clearances and specific energy control procedures. He may act as the CAP Representative for special work permits. Job Supervisors must have the knowledge and skills necessary for the safe application, use, and removal of hazardous energy control procedures. A Job Supervisor is responsible for verifying that the lockout/tagout procedure is implemented and ensuring the task is completed before removal of the lockout/tagout procedure. “Job Supervisor” is an HECP function. A Job Supervisor is not associated with the management or supervision of personnel.

Lockout – The placement of HECP locks on an energy isolation device in accordance with an established procedure, indicating that the energy isolation device must not be operated.

Lockout Device – A lockable device used to hold an energy-isolating device in the safe position.

LO/TO – An acronym for Lockout/Tagout.

Maintenance Supervisor – The supervisor in charge of maintenance of the equipment and systems in his area of responsibility. He authorizes personnel as Switchmen, Job Supervisors and High Voltage Switchmen for his facilities based on their knowledge of the equipment. He assigns the Job Supervisor on LO/TO procedures, manages the Supervisor Lock Removal process and coordinates with Water Control on emergency switching.

Non-CAP – A contractor or any non-CAP utility, power system, station, or employee.

Operating Log - Documented records created, maintained, and used to describe and record

operating information and events (troubleshooting, repairs, etc.) that aid in evaluating present and past unit, plant or station status.

Operations Supervisor – A person who approves, issues, receives and releases Interconnected System Clearances and external system hot line orders. At CAP, the Operations Supervisor function is performed by the Water Control Supervisor or his designee (Water Control Dispatcher). The Operations Supervisor function for a non-CAP system is typically a power dispatcher.

Out of Service – A Hazardous Energy Control Procedure used to alert personnel that a system or piece of equipment is not in service and should not be operated. See Section 17.

Outage Request – An outage request is a workflow process initiated by the planner to obtain approval for planned outages on systems that impact capacity. The request form includes details of the work sufficient to determine the protection needed.

Plant Record Log - The Plant Record Log is used to record Hazardous Energy Control Program procedures in sequence so as to maintain the sequence numbering scheme for each type. This log provides a summary of the activity at the plant.

Protection Perimeter - A safe work area established by the hazardous energy controls to allow each Job Supervisor and Workers to maintain exclusive control over all the hazardous energy isolation devices for the scope of work to be performed.
Note: Equipment that remains energized, or that can be energized, is not a part of the protection perimeter.

Risk – A combination of the likelihood of occurance of injury or damage to health and the severity of injury or damage to health that results from a hazard.

Special Condition – An unusual or temporary condition pertaining to equipment (or system). See Section 18.

Special Condition Tag – These tags are used to provide temporary special operating conditions or limiting instructions affecting in service equipment.

Special Work Permit – A statement that documents the coordination between CAP and a contractor to authorize work when a lockout/tagout procedure is required. See Paragraph 13.2.

Specific Energy Control Procedure – A complex lockout/tagout procedure that specifies the steps required to isolate a specific system or piece of equipment from sources of hazardous energy and/or release hazardous stored energy. The procedure must be reviewed and approved by the employees working under it. See Section 9.

Stored Energy – Hazardous energy (electrical, mechanical, hydraulic, chemical, etc.) that remains in an isolated device such as that found in a charged capacitor, a loaded spring, chemical solutions, pressurized vessels, piping, etc.

Supervisor Lock Removal – A workflow process used when a worker is unavailable to remove his personal lock, the work is complete and the system needs to be returned to service. The process documents the actions and required approvals necessary before a personal lock is removed by means other than the worker's personal key. See Section 11.

Switching – The changing of the position of an energy control device.

Switchman – An Authorized Employee designated by the maintenance supervisor, based on his knowledge of the equipment and procedures in his area of responsibility, to perform switching for lockout/tagout or reconfiguring facility systems.

Tagout – The placement of a Hazardous Energy Control Procedure tag on an energy isolation device in accordance with an established procedure, indicating that the energy isolation device must not be operated. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

Three Part Communications - An exchange of information that is clear, concise, definitive, and ensures that the recipient repeats the information back correctly; and the transmitting party acknowledges the response as correct or repeats the original statement until any misunderstandings are resolved.

Water Control Dispatcher – A CAP employee who operates the aqueduct remotely from a control center. Issues clearances and ICC's and logs actions in CLEAT. Manages dive permits and coordinates with the inspector. Tracks system outage activity by applying SCADA tags indicating status.

Worker – An Affected Employee.

20 FORMS

20.1 **General Switching**

20.2 **Specific Energy Control Procedure**

20.3 **Clearance**

20.4 **Supervisor Lock Removal Form / Supervisor Lock Removal Workflow**

20.5 **Special Work Permit**

20.6 **Outage Request Workflow**