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14. ABSTRACT The Bureau of Reclamation owns, operates and maintains 53 hydroelectric powerplants and many switchyards, pumping plants, dams, canals, and associated facilities that are important to electric power and water delivery systems. This document establishes consistent procedures for the control of hazardous energy. The latter is intended to satisfy the requirements of OSHA 29 CFR 1910.147 and 29 CFR 1910.269.					
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**Facilities, Instructions, Standards, and Techniques
Volume 1-1**

Hazardous Energy Control Program



**U.S. Department of the Interior
Bureau of Reclamation
Power Resources Office
Denver, Colorado**

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Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Codes and Standards

29 CFR 1910.147, The control of hazardous energy (lockout/tagout)
29 CFR 1910.269, Electric Power Generation, Transmission, and Distribution
29 CFR 1910.333, Selection and use of safe work practices
NFPA 70E, Standard for Electrical Safety in the Workplace

Reclamation Standards and Documents

FAC P04, Hydroelectric Power
FAC P14, Power Operations and Maintenance (PO&M) Technical Standards.
FAC 04-14, Power Facilities Technical Documents.
ADM 07-01, Programmatic Internal Control Program Management.
RCD 03-03, Request for Deviation from a Reclamation Manual Requirement and Approval or Disapproval of the Request.

Acronyms and Abbreviations

ANSI	American National Standards Institute
ASSE	American Society of Safety Engineers
CFR	Code of Federal Regulations
DOI Talent	Department of Interior (Talent)
EAL	Employee Authorization List
FIST	Facilities Instructions, Standards, and Techniques
FIST 1-1	Facilities Instructions, Standards, and Techniques, Volume 1-1
F-HECP	Facility Hazardous Energy Control Program
HEC	Hazardous Energy Control
HECP	Hazardous Energy Control Program
HEWP	Hazardous Energy Work Permit
JHA	Job Hazard Analysis
NERC	North American Reliability corporation
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PO&M	Power Operations and Maintenance
PRO	Power Resources Office
PPE	Personal Protective Clothing and Equipment
Reclamation	Bureau of Reclamation
RM D&S	Reclamation Manual Directives and Standards
RO	Responsible Official
RSHS	Reclamation Safety and Health Standards
SCADA	Supervisory Control and Data Acquisition
SOP	Standing Operating Procedure
SPF	Switching Program Form
SWP	Special Work Permit
TSC	Technical Service Center

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1.0 Introduction

The Bureau of Reclamation operates and maintains hydroelectric powerplants, switchyards, pumping plants, water delivery equipment and associated facilities in the 17 western United States. These facilities house complex electrical and mechanical equipment that must be kept operational because they are critical to the electric power and water delivery systems relied on by many. FIST manuals provide criteria and procedures that should be utilized by the offices involved in managing Reclamation facilities and assets.

This document establishes standard technical practices to ensure the safe, reliable, economic and efficient operations and maintenance of Federal facilities by keeping related assets in good condition and ultimately protecting Federal investments. These technical practices provide a sufficient level of detail to ensure consistent application while providing flexibility for the use of innovative techniques and approaches. These instructions are to be utilized by transferred facilities and other entities as appropriate. These instructions are intended to promote uniformity in the manner that assets are managed, documented, and coordinated. This document was developed with input from staff in Reclamation's Denver, regional, and area offices.

1.1 Purpose and Scope

FIST 1-1 establishes an HECP to provide for the physical safety of employees and the public who work on or near any equipment (or system) that produces, uses, or stores hazardous energy. The HECP provides consistent procedures for controlling hazardous energy and maintaining operational control of a facility's configuration. It establishes minimum standards and performance requirements for the control of hazardous energy at all Reclamation operated or maintained facilities. All Reclamation facilities must comply with the procedures described herein.

1.2 Reclamation Standard Practices

Reference Reclamation Manual Policy FAC P14, Power Operations and Maintenance (PO&M) Technical Standards, for requirements regarding responsibilities with respect to text designations within this Technical Document.

There may be multiple ways to accomplish tasks outlined in this document, and facilities may exercise discretion as to how certain tasks will be accomplished based on equipment configurations and available resources. Reclamation's regions, PRO, and TSC agree that certain practices are required to be consistent across all Reclamation facilities.

Refer to the Reclamation Manual Directive and Standard FAC 04-14, Power Facilities Technical Documents, for more details concerning technical documents.

{The entirety of this document, unless otherwise noted, is to be considered as red bold and bracketed.}

1.3 FIST Revision Requests

The FIST Revision Request Form (POM 226) is used to request changes to a FIST document. The request will include a summary of the recommended changes and a basis for the revision or new FIST. These forms will be submitted to the Manager, PRO. The PRO Manager will keep a list of Revision Requests for each FIST and include these in the next scheduled revision unless it is important enough to prioritize the change sooner.

1.4 Philosophy

Safe work practices take precedence over immediate job production. All switching operations must be guided and tested by the following fundamental principles:

- 1) Start with the correct procedure and follow it exactly.
- 2) The six basic steps of switching:
 - a. Carry the SPF with you while switching;
 - b. Touch or point to the device identification nameplate to verify correct device;
 - c. Recheck the SPF for correct device and sequence;
 - d. Verify anticipated device position;
 - e. Perform requested action on the device; and
 - f. Verify desired device position.
- 3) Clearance Tags, Hot Line Tags, or Personal Tags are to be considered the same as locks. Tags must not be used on devices capable of receiving a lock.
- 4) Violating a Clearance Lock, Clearance Tag, Hot Line Tag, Personal Lock, or Personal Tag can kill somebody.
- 5) Equipment must not be operated, moved, or removed when Clearance Tags, Hot Line Tags, Personal Tags, Clearance Locks, or Personal Locks are in place.
- 6) **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.
- 7) Energy isolation devices capable of being locked must be locked when using hazardous energy control procedures.
- 8) Equipment must be considered energized until appropriate tests have been performed to verify the equipment is de-energized.

1.5 Facility Hazardous Energy Control Program and Procedures

Each area office or facility must use this FIST 1-1 to develop facility specific programs. The F-HECP must be comprised of a copy of FIST 1-1 in its entirety, with the specific facility's requirements integrated and identified by highlighting and/or underlining. See Appendix B – Facility Hazardous Energy Control Program Example for a sample of this integration.

In situations where Reclamation employees are required to perform work at transferred works or other agencies where the FIST 1-1 is not utilized, Reclamation personnel must ensure that they are provided information and trained on the local program. In the absence of a local program, the Job Supervisor must follow the guidance implemented by FIST 1-1. If an employee does not feel that the work can be performed safely under an approved procedure, the work must not be performed.

- 1) The F-HECP must:
 - a. At a minimum, be as restrictive as the FIST 1-1 requirements;
 - b. Incorporate specific hazardous energy control procedures for the facility;
 - c. Identify the Responsible Official (RO);
 - d. Be reviewed and updated at least annually;
 - e. Be annually approved and signed by the RO;
 - f. Be readily available at each facility;
 - g. Be made available to each employee; and
 - h. List facility specific abbreviations and terms.
- 2) A current Reclamation Employee Authorization List (EAL) must:
 - a. Be maintained at each facility;
 - b. Identify the employees and the HEC roles they are authorized to perform:
 - i. Authorized Employees;
 - ii. Switchmen;
 - iii. Job Supervisor; and
 - iv. Operations Supervisors.
 - c. Be reviewed and signed by the RO at least annually.
- 3) An EAL must be maintained and reviewed as required in the F-HECP to identify:
 - a. Reclamation non-Facility personnel and the HEC roles they are authorized to perform;
 - b. Authorized Non-Reclamation personnel and the HEC roles they are authorized to perform; and
 - c. Contractor's Workplace representatives.
- 4) The EAL should be provided to the appropriate non-Reclamation organizations listing personnel who are authorized to request, issue, or receive interconnected system clearances or hot line orders.

1.6 Job Hazard Analysis

A hazard assessment must be performed to identify all hazards specific to the work or tasks to be performed. Refer to RSHS Section 4, Work Planning. Analysis must include electrical shock and arc flash hazard considerations. See FIST Volume 5-14 for more information concerning arc flash hazards.

A hazard assessment would determine when a JHA must be developed and the identification of any hazardous energy control procedures necessary to ensure the safety of personnel and facilities. All hazards identified by a hazard assessment shall be addressed and mitigation techniques identified on the JHA.

1.7 Emergencies

The F-HECP may be suspended as necessary to permit proper handling of an emergency as defined in Appendix A, Definitions. However, in handling such emergencies, safety of personnel must be given paramount consideration.

1.8 Document Retention

Upon completion of the work, HEC procedures and supporting documentation, including JHAs, job plans, clearance/hot line requests, HEWP, Release Under Abnormal Conditions, SWP, SPF, etc., must be kept for a minimum of 7 years. If another program requires retention of the same document, such as mandatory reliability compliance or unexpected event reporting, the longer retention requirement prevails for that document. Records may be retained in any format (e.g., electronic or hard copy) that can be identified and disposed of when the retention period is met.

1.9 Air, Water, Hydraulic Systems

There are not any generally accepted industry pressure levels for air, water, and hydraulic systems. Each facility in their F-HECP must define, in Section 11.1.5, the threshold where the energy level in an air, water, or hydraulic system becomes subject to:

- 1) Personal Lockout and Tagout; and
- 2) Clearance.

2.0 Responsibility and Authority

2.1 Responsible Official

The RO at each facility or Area Office must ensure that the requirements of the F-HECP are:

- 1) Properly applied;
- 2) Complied with; and
- 3) Understood by all employees.

2.2 Supervisors

Supervisors must ensure that all personnel under their jurisdiction receive the appropriate level of instruction concerning the F-HECP and its application.

2.3 Emergency Switching

An Operations Supervisor is responsible for directing emergency switching. If emergency switching is required and a Switchman is not available, any person may perform switching if deemed qualified by the Operations Supervisor.

2.4 Employees

Employees must not work under an HEC procedure until:

- 1) Trained;
- 2) Tested;
- 3) Authorized by the RO; and
- 4) Issued Personal Locks.

It is the responsibility of each employee to act within their authority and immediately report any violations of the F-HECP or any HEC procedures to their supervisor.

Additional employee F-HECP responsibilities are described in subsequent sections of this document.

2.5 Manager, Power Resources Office

The Manager, PRO, is responsible for the following:

- 1) Providing technical support;

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- 2) Providing standardized materials to be used by the facilities for training and examination; F-HECP specific information must be provided by the Area Office or facility.
- 3) Collecting data from F-HECP reviews, Review of Power Operations and Maintenance¹ recommendations, and Unexpected Event Reporting² documentation including:
 - a. Effectiveness of training program (examination, presentation, trainer, etc.);
 - b. HECP related recommendations; and
 - c. HECP related incident investigation findings;
- 4) Reviewing Reclamation FIST 1-1;
- 5) Providing feedback and report to regional directors; and
- 6) Reviewing and taking appropriate action on suggested revisions, comments, and concerns.

¹ See FIST Volume 6 5, Power Review of Operations and Maintenance Program.

² See FIST Volume 6 3, Unexpected Event Reporting.

3.0 Training Program

3.1 Purpose

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

3.2 Requirements

The RO must ensure that facility-specific information is developed and included with the standardized training materials. The following training is required annually for Authorized Employees and Incidental Employees:

1) Authorized Employees:

- a. Prior to being authorized to work under an HEC Procedure, employees must receive a minimum of four hours of F-HECP training.
- b. Employees must complete an examination, with a minimum score of 80% to demonstrate adequate working knowledge of the F-HECP. Examinations must include the questions provided by the PRO and additional F-HECP related questions.
- c. Employees passing the examination will be recommended to the RO for placement on the EAL.
- d. Employees may be subject to examination at any time on F-HECP.

Note: Optional Proficiency Checksheets are available in Appendix C – Forms and Tags for Authorized Employees, Job Supervisors, Switchmen, and Operations Supervisors.

2) Incidental Employees must receive awareness training.

3.3 Retraining

Additional training must be provided annually or if:

- 1) There is a change in:
 - a. An employee's classification;
 - b. Assignment of duties;
 - c. Equipment;
 - d. Systems or processes that present a new energy control hazard; or
 - e. The F-HECP;
- 2) There is reason to suspect deficiencies or inadequacies in the employee's knowledge of the F-HECP or use of energy control procedures;
- 3) An employee does not complete the annual training.; or

- 4) An employee fails the examination.

3.4 Documentation

The RO is responsible for documenting all training (including any retraining) in the U.S. Department of Interior training tracking system. DOI Talent is the current U.S. Department of Interior training tracking system.

4.0 Facility Hazardous Energy Control Program Review

4.1 Requirements

- 1) The RO must ensure that the F-HECP review is conducted at least annually, to ensure:
 - a. Proper implementation;
 - b. Proper documentation;
 - c. Employees are familiar with their responsibilities;
 - d. Employees maintain proficiency;
 - e. Training requirements are met; and
 - f. Corrective action plans are prepared and completed to address any identified deficiencies;
- 2) These reviews must include:
 - a. A random sampling of the HEC procedures (including JHAs, job plans, etc.),
 - b. Program deficiencies, such as:
 - i. Incidents,
 - ii. HECP errors,
 - iii. Status of previously noted incidents, and
 - iv. Other applicable information;
 - c. Employee interviews;
 - d. Training program documentation;
 - e. Confirmation that the EAL is current;
 - f. F-HECP review and revision has been completed;
 - g. An assessment of the legibility of the tags; and
 - h. An evaluation of progress toward having lockable energy isolation devices so that use of Personal and Clearance Tags can be eliminated.
- 3) The review must be documented on the “F-HECP – Annual Review Form” (POM-211). Reserved power facilities must send a copy to the PRO Manager, Area Manager, and Regional Power Manager. A sample job plan for the review is provided in Appendix C.

4.2 Responsibility

The RO must designate an authorized employee(s) to conduct the review of the F-HECP. The designated employee(s) must not have been involved in developing the HEC procedures being reviewed. The designated employee(s) must be able to determine:

- 1) Whether the steps in the HEC procedures are being followed;
- 2) Whether the employees involved know their responsibilities under the HEC procedures;
- 3) Whether the HEC procedures are adequate to provide the necessary protection; and

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- 4) Whether changes, if any, are needed.

5.0 Lockout Devices, Tagout Devices, and Forms

5.1 Locks

1) General.

Each facility must provide uniquely designated locks as described in its F-HECP. Locks must be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as the use of bolt cutters or other metal cutting tools.

2) The locks must be defined in the F-HECP and standardized within the facility in at least one of the following criteria:

- a. Color;
- b. Shape;
- c. Size; or
- d. Specific markings.

3) Personal locks.

a. Personal locks must:

- i. Be used by Authorized Employees;
- ii. Be for personal protection only;
- iii. Not be used for any other purpose;
- iv. Indicate the identity of the person who applied them;
- v. Be used on energy isolation devices that are capable of being locked out, or lock boxes; and
- vi. Be a uniquely keyed lock or set of locks with a single key controlled by the Authorized Employee. If combination locks are used for personal locks, the combination must be known only by the Authorized Employee. Spare keys must not be created or used.

b. Personal locks must also be labeled (POM 139) with:

- i. DANGER,
- ii. HANDS OFF,
- iii. DO NOT OPERATE,
- iv. EMPLOYEE'S NAME.

Note: Lock labels with sleeves and tags are available from publishing services at (303)-445-2066, or publishingservices@usbr.gov. The labels and tags can also be ordered online on the WEBCDR site (<https://print>).

4) Clearance locks.

a. Clearance locks must:

- i. Be used by authorized switchmen;
- ii. Be used for clearance purposes only;

- iii. Establish the limits of the clearance;
 - iv. Be used on each energy isolation device that is capable of being locked out;
 - v. Have the key uniquely identified with its associated clearance lockset, on an easily readable label; and
 - vi. Not have spare keys created or used.
 - b. Clearance locks must be labeled (POM-140) with:
 - i. DANGER,
 - ii. DO NOT OPERATE,
 - iii. PEOPLE WORKING,
 - iv. CLEARANCE.
 - c. Combination locks must not be used as clearance locks.
- 5) Operations Locks.
- a. Operations Locks must:
 - i. Be used by Switchmen;
 - ii. Be used for Operational Configuration Management as directed in SPF, SOP, job plan or JHA;
 - iii. Not be used on an isolation device as part of an HEC procedure;
 - iv. Be used and recorded as described in the F-HECP; and
 - v. Be identified in the F-HECP.

5.2 Clearance Lockbox

A clearance lockbox must:

- 1) Be described in the F-HECP, including how the clearance will be associated with the lockbox;
- 2) Be used to capture the key(s) associated with a clearance;
- 3) Allow the key(s) to be visually identifiable; and
- 4) Be the only place associated with a clearance where a personal lock is placed to control all forms of hazardous energy associated with the scope of work to be performed.

5.3 Multi-Lock Device

A device that allows multiple locks to be placed on an energy isolation device. Use of a multi-lock device is recommended on all lockable energy isolation devices and lock boxes.

5.4 Tags

Energy isolation devices for machinery or equipment installed after January 2, 1990, must be capable of receiving a lock. Equipment that currently does not have provisions to accept a lock must be retrofitted to enable placing a lock if practicable.

1) General:

a. Standardized:

Tags must be standard Reclamation wide. Tags are shown in appendix C. Tags are available from publishing services at 303-445-2066. Tags are available by the box, in units of 50.

b. Tag Attachment:

Tags, including their means of attachment, will be substantial enough to prevent inadvertent or accidental removal. The means of attachment must be non-reusable, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of 50 pounds. It must also have the general design and basic characteristics of being at least equivalent to a one piece, all environment tolerant nylon cable tie.

c. Tag Numbering:

Clearances and Hot Line Tags will be uniquely numbered by the facility. The number will be permanently attached or engraved on the tag.

d. Tag Replacement:

Tags that become damaged or illegible must be replaced immediately.

2) Personal Tags (POM 166):

Each facility must define the use of Personal Tags in its F-HECP. A Personal Tag may be used in conjunction with a Personal Lock for informational purposes.

a. Personal Tags must:

- i. Be used by Authorized Employees;
- ii. Be for personal protection only;
- iii. Be used on energy isolation devices that are incapable of being locked out; and
- iv. Be completely filled out prior to placement.

3) Clearance Tags (POM 137):

a. Clearance Tags must:

- i. Be used by Switchmen;
- ii. Establish the limits of the clearance; and
- iii. Be used on energy isolation devices that are incapable of being locked out.

4) Special Condition Tags (POM 138):

These tags are used to designate special conditions affecting Equipment. Special Condition Tag must be numbered and completely filled out prior to placement.

5) Hot Line Tags (POM 135):

These tags are used in connection with hot line orders to prevent reenergizing equipment.

a. Hot Line Tags must:

- i. Be used by Switchmen; and
- ii. Be applied to the appropriate circuit breaker control switches.

5.5 Standard Forms

Required forms listed below are shown in Appendix C. They are available on the Reclamation intranet site at:

<https://teamssp.bor.doi.net/printanddup/forms/POM%20Forms/Forms/AllItems.aspx>

1) General

The following forms have been standardized and must be used:

- a. F-HECP Title Page (POM 210)
- b. F-HECP – Annual Review (POM 211)
- c. Clearance Request (POM 212)
- d. Hazardous Energy Work Permit (POM 213)
- e. Release Under Abnormal Conditions (POM 214)
- f. Special Work Permit (POM 215)
- g. Switching Program Form (SPF) (POM 216)
- h. Personal Lock Label (POM 139)
- i. Clearance Lock Label (POM-140)
- j. Personal Tag (POM 166)
- k. Clearance Tag (POM-137)
- l. Special Condition Tags (POM 138)
- m. Hot Line Tags (POM 135)

2) F-HECP Title Page

This form is to be used as the title page for the F-HECP, documenting annual approval by the RO.

3) F-HECP – Annual Review

This form is used to document the annual F-HECP review.

4) Clearance Request

This form is used to request a clearance on equipment (or a system). As there are not to be any standing HEC procedures, there must be documentation of the initiation of a request. This form is also to be used to request Hot Line Orders.

5) Hazardous Energy Work Permit (HEWP)

This form is used to document the process for work on systems that have not been isolated from all forms of hazardous energy.

6) Release Under Abnormal Conditions

This form documents the removal of an Authorized Employee's Personal Lock (Tag) or release of their clearance.

7) Special Work Permit (SWP)

Formally documents the coordination between Reclamation and contractor personnel to authorize work by the contractor's forces on or near Reclamation facilities when Hazardous Energy Control Procedures are required. This form includes:

- a. Contractor name;
 - b. Special Work Permit number;
 - c. Clearance or hot line order number. If a personal lockout is used instead of a clearance, the lockout procedure must be attached to the SWP;
 - d. A detailed written description of the purpose and scope of the work to be accomplished and if feasible, drawings identifying the limits of the clearance;
 - e. Personal protective ground(s) required;
 - f. A statement that the Contractor's Workplace Representative, Reclamation Representative and Authorized Reclamation Employee:
 - i. Discussed the work to be performed;
 - ii. Reviewed the details of the hazardous energy control procedures to be utilized for adequacy; and
 - iii. Verified understanding regarding placement of:
 - 1. Shorts;
 - 2. Jumpers; and
 - 3. Personal protective ground(s).
 - iv. Conditions of the working area.
 - g. Signature blocks for each of the parties to acknowledge the conditions of the Special Work Permit;
 - h. A release statement to be signed by the Contractor's Workplace Representative, Reclamation Representative and Authorized Reclamation Employee certifying:
 - i. All contractor work associated with this Special Work Permit is complete;
 - ii. Verification of removal of, or an accounting for all:
 - 1. Shorts;
 - 2. Jumpers; and
 - 3. Personal protective ground(s).
 - iii. All contractor personnel and equipment are in the clear.
- 8) Switching Program Form (SPF)
- a. Purpose
The SPF is used to formalize and document each step in the process of placing and releasing clearances, hot line orders, and performing switching (for operational configuration management).
 - b. Numbering
Each SPF must be given a unique number. The necessary coding for the year and facility must be described in the F-HECP. One series of consecutive numbers may be used for all programs, or a separate series of consecutive numbers may be used for clearances, hot line orders, and switching.
 - c. Use

Note: No modifications may be made to this form. It is acceptable to add extra page(s) as needed to record additional information. Use of these additional pages should be defined in the F-HECP.

- i. The SPF must be prepared as identified under the appropriate section of the F-HECP.
- ii. The SPF will not be valid for switching until signed and dated by the preparer and a person performing a second check.
- iii. Previously prepared SPFs may be used for reference only.
- iv. The SPF (or a copy) must be carried by the Switchman during switching.
- v. The SPF is used to record in detail the exact operation and the locking or tagging information required.
- vi. Each operation must be listed in the precise sequence to be performed, including those operations or steps not requiring a lock or tag.
- vii. The SPF must adhere to the following:
 1. Only one operation per step on the SPF.
 - a. Checking one device in the desired position and locking or tagging it must be considered one step.
 - b. Operating one device and locking or tagging it in the desired position must be considered one step.
 - c. A communication action must be numbered as one step on the SPF:
 2. The equipment description, for a switching step, must be specific enough to identify the device;
 3. The SPF must identify the locations of the locks and tags for a hot line order or clearance;
 4. Be legibly generated in indelible ink; and
 5. Contain no erasures.
- viii. Corrections or changes to the SPF must be:
 1. At the discretion of the preparer;
 2. Documented;
 3. Initialed by the preparer; and
 4. Second checked and initialed by another qualified person.
- ix. When the SPF cannot be provided to the Switchman, the F-HECP must define the process to be used to meet the requirements established by this document.
- x. The initial placement and final removal of all personal protective ground(s) must be documented on the cover page of the SPF. It is not required to track temporary removal of personal protective grounds for testing purposes. Documentation must include:
 1. The personal protective ground identification number(s);
 2. Date and time;

3. The name of the employee who placed or removed the personal protective ground(s); and
4. The initial placement location of the personal protective ground(s) and final removal of personal protective grounds.

Note: When personal protective grounds are required to perform work per FIST 5-1, Personal Protective Grounding for Electric Power Facilities and Power Lines, and temporary removal is necessary to perform testing, only the initial installation and final removal must be documented on the SPF. If the grounds are relocated to a different location, then they must be documented as a new line item on the SPF.

5.6 Other Forms

- 1) Examples of these forms are shown in Appendix C. They are also available on Reclamation's Forms site.
 - a. General. The following forms have been standardized and may be used in this program:
 - i. FIST Revision Request (POM 226)
 - ii. Hazardous Energy Work Permit Record (POM 217)
 - iii. Personal Lockout and Tagout Record (POM 218)
 - iv. Special Condition Tag Record (POM 219)
 - v. Special Work Permit Record (POM 220)
 - vi. Proficiency Checksheets:
 1. Authorized Employee (POM 221)
 2. Job Supervisor (POM 222)
 3. Switchman (POM 223)
 4. Operations Supervisor (POM 224)
 - vii. FIST Revision Request (POM-226). This standard form is used to suggest or request a revision or change to a FIST volume.
- 2) Use of the following forms will be described in the F-HECP:
 - a. Hazardous Energy Work Permit Record (POM-217). This form is used to document the authorization and expiration of Hazardous Energy Work Permits;
 - b. Personal Lockout and Tagout Record (POM-218). This form is used to document the placement and removal of locks and tags under Personal Lockout and Tagout;
 - c. Special Condition Tag Record (POM-219). This form is used to document the placement and removal of special condition tags;
 - d. Special Work Permit Record (POM-220). This form is used to document the issue and release of special work permits; and
 - e. Proficiency Checksheets (POM-221, POM-222, POM-223, POM-224). These example forms are used to evaluate the proficiency of employees by the supervisor prior to making a recommendation to the RO;

6.0 Station Log Entries

All station log entries related to HEC procedures must be typed, legibly handwritten, or stamped in ink. Such entries must be made as soon as practicable after the action has been accomplished. In addition to the documentation provided by the SPF, entries in the dispatch center, control center, or station log must be made as follows:

6.1 Colors

Red must be used for issuing clearances (and hot line orders).
Green must be used for releasing of clearances (and hot line orders).

6.2 Actions

After a clearance or hot line order has been issued or released, or special condition or operational configuration management switching has been completed, the following must be logged:

- 1) Clearance or Hot Line Order:
 - a. Date;
 - b. Time;
 - c. Type of action (placed or removed);
 - d. Number assigned;
 - e. Issued to or released by; and
 - f. Equipment covered by action.
- 2) Special condition or operational configuration management switching:
 - a. Date;
 - b. Time;
 - c. Type of action (placed or removed);
 - d. Number assigned;
 - e. Issued to or released by; and
 - f. Equipment covered by action.

6.3 Status of Actions

Each facility must develop a systematic method of keeping appropriate personnel informed concerning the status of clearances, hot line orders, operation configuration management switching, and special conditions. A readily accessible file of F-HECP forms or records will be maintained for current clearances, hot line orders, special conditions, and special work permits.

7.0 Tracking HEC Records

Section 1.8, Document Retention, covers retention requirements for HEC procedures and supporting documentation. The F-HECP will describe the location of all supporting documentation.

7.1 Personal Lockout (Tagout) Records

- 1) Placement and removal of all personal locks and tags must be recorded. Personal locks placed on clearance lockboxes are exempt.
- 2) Each facility will describe in the F-HECP what equipment (or system) does not require coordination with operations.
- 3) The F-HECP will describe the location of records and how the records will be reviewed to ensure accuracy.
- 4) The information to be recorded at a minimum is the following:
 - a. Date and time placed;
 - b. Date and time removed;
 - c. Name of person placing and removing the device; and
 - d. Device location and equipment.

7.2 Special Condition Tag Records

- 1) Placement and removal of all special condition tags must be recorded.
- 2) The F-HECP will describe the location of records and how the records will be reviewed to ensure accuracy.
- 3) The information to be recorded at a minimum is the following:
 - a. Tag number;
 - b. Original date and time placed;
 - c. Name of person placing and removing the tag;
 - d. Device location and equipment;
 - e. Date and time removed;
 - f. Current review date and reviewer; and
 - g. Remarks.

7.3 Special Work Permit Records

- 1) Issuance and release of all SWPs must be recorded in the station log.
- 2) The F-HECP will describe the location of records and how the records will be reviewed to ensure accuracy.
- 3) The information to be recorded at a minimum is the following:

- a. SWP number;
- b. Date and time issued;
- c. Issue to;
- d. Device location and equipment; and
- e. Date and time released.

7.4 Hazardous Energy Work Permit Records

- 1) Authorization and expiration of all HEWPs must be recorded.
- 2) The F-HECP will describe the location of records and how the records will be reviewed to ensure accuracy.
- 3) The information to be recorded at a minimum is the following:
 - a. HEWP number;
 - b. Date and time authorized;
 - c. Person issued to;
 - d. Device location and equipment; and
 - e. Expiration date and time.

8.0 Operational Configuration Management

8.1 Purpose

Operational configuration management is performed by changing the position and status of electrical, mechanical, hydraulic, etc., systems and devices.

- 1) Operational configuration management includes changes for:
 - a. Emergencies;
 - b. Maintenance;
 - c. Testing;
 - d. Changes in operating conditions; and
 - e. Restoration to normal operating conditions.
- 2) HEC procedures are considered operational configuration management procedures.

8.2 Procedure for Switching to Change Configuration

- 1) Configuration changes directed by the Operations Supervisor must be conducted using three-part communications.
- 2) All configuration changes must be documented by a written step by step procedure such as:
 - a. SPF;
 - b. Standing Operating Procedure;
 - c. Job plan; or
 - d. JHA.
- 3) All configuration changes must be approved and recorded in the station logbook. The log records included in this publication are considered extensions of the station logbook.

8.3 Positive Controls in Public Access Areas

Locks, or other positive controls, must be installed on the energy isolation devices or equipment in areas with:

- 1) Non-restricted access or
- 2) Public access.

8.4 Special Conditions

- 1) Purpose.
The special condition procedure is used to provide **TEMPORARY** special operating or limiting instructions. Although a special condition tag may serve as temporary protection

for equipment, **IT MUST NEVER BE USED FOR PERSONNEL PROTECTION.** A special condition tag must not be used for permanent instructions. Permanent instructions should be given on permanent instruction plates or by other acceptable means. If a special condition tag is used 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.

2) Responsibility and authority.

An employee who observes any equipment that is damaged or in a condition that may limit its operation or compromise its integrity must immediately report the condition to the Operations Supervisor or another supervisor. The Operations Supervisor must determine if a special condition exists, provide any necessary instructions, and assign a unique identifying number to each special condition tag. The numbering format must be identified in the F-HECP. Where provided, display screen SCADA points also must reflect the special condition tag.

3) Use.

Placement and removal of special condition tags must be logged in the station logbook. A record will be maintained as described in the F-HECP. A sample special condition tag record sheet is provided in Appendix C (POM 219).

8.5 Capacitor Banks

- 1) At least 5 minutes must elapse between the de-energizing of a capacitor bank and the closing of its ground switch.
- 2) A capacitor bank must remain de-energized for at least 5 minutes before it is re-energized.
- 3) An additional 5 minutes must be allowed after the ground switch is closed before issuing the clearance permitting personal protective ground(s) to be installed.
- 4) The time required in (3) above must be explicitly expressed on the SPF.

9.0 Release Under Abnormal Conditions

9.1 Purpose

This section describes the process used to document the removal of an Authorized Employee's personal lock or tag; or the Job Supervisors release of their clearance in their absence. The Release Under Abnormal Conditions form (POM-214) must be used to document the release.

9.2 Procedure

Each personal lock or tag must be removed by the Authorized Employee who placed it. Each clearance must be released by the Authorized Employee who holds it. When this Authorized Employee is not available to remove/release it, the Authorized Employee's supervisor, in consultation with the Operations Supervisor, must remove the personal lock, tag or clearance in the following manner:

- 1) Document the removal utilizing the Release Under Abnormal Conditions form (POM-214);
- 2) The Authorized Employee's supervisor must verify that the Employee who placed the personal lock is not at the facility;
- 3) The Authorized Employee's supervisor must make reasonable efforts to inform the Authorized Employee that their personal lock, tag, clearance will be removed/released;
- 4) The Authorized Employee's supervisor must take responsibility for the personal lock or tag;
- 5) If applicable, a new job supervisor must request and accept an identical clearance prior to release of the original clearance;
- 6) The Authorized Employee's supervisor must authorize the removal/release of the personal lock, tag, clearance;
- 7) The Authorized Employee's supervisor must direct the removal of the personal lock or tag; and
- 8) The Authorized Employee's supervisor must inform the Employee upon their return to the facility and prior to commencing work that their personal lock, tag, clearance has been removed/released.

10.0 Personal Lockout (Tagout)

10.1 Use Restrictions

Personal lockout (tagout) must NOT be used when the protection requires a clearance. An employee must NOT work under the protection of another employee's personal lock (tag).

For contractor work that requires the use of hazardous energy controls, but does not meet the requirements of Section 11, the F-HECP must document the process for contractors to follow that will establish energy isolation and control of equipment and/or systems. Documentation of the Personal Lockout on the Special Work Permit (Section 16) is required.

10.2 General

- 1) Equipment that can be removed from service and restored to service without a clearance must have an approved JHA that includes, or has attached, a procedure identifying where the personal lock(s) or tag(s) are to be placed.
- 2) Placement and removal of any personal lock(s) or tag(s) must be:
 - a. Coordinated with operations;
 - b. Second checked by a second Authorized Employee as defined in the F-HECP;
 - c. Documented; and
 - d. Recorded.
- 3) Up to four personal locks (tags) may be used by an Authorized Employee on the energy isolation devices for equipment (or system).
- 4) When a personal tag (POM-166) is used, the following requirements apply:
 - a. The personal tag must be attached directly to the energy isolation device whenever possible;
 - b. Where a personal tag cannot be affixed directly to the energy isolation device, the personal tag must be located as close as safely possible to the energy isolation device, in a position that will be immediately obvious to anyone attempting to operate the energy isolation device; and
 - c. Additional means must be employed to provide a level of personal protection equivalent to that provided by a lock. Examples include:
 - i. Placing the personal tag in a manner that inhibits operation of the energy isolation device;
 - ii. Removing fuses or an isolating circuit mechanism;
 - iii. Opening an extra disconnecting device;
 - iv. Removing a valve handle; or
 - v. Blocking a controlling switch.

10.3 Procedure

- 1) The placement and removal of a personal lock (tag) must be:
 - a. Installed at the energy isolation device after the device has been placed in the required condition; and
 - b. Affixed to the energy isolation device in a manner that will maintain the device in the safe position.
- 2) Appropriate checks must be performed to verify de energization and release of stored energy.
- 3) Upon completion of the servicing or maintenance, the equipment (or system) is restored by:
 - a. Ensuring that nonessential items have been removed from the work area;
 - b. Ensuring that machine or equipment components are operationally intact;
 - c. Removing personal locks or tags; and
 - d. Performing any required tests necessary to ensure full operational capability.
- 4) The F-HECP will describe configuration management approval procedures when equipment or systems cannot be returned to full service.

11.0 Clearances

11.1 Use

A clearance procedure is a formalized and documented hazardous energy control process which allows Authorized Employees to safely perform their assigned tasks. Clearances establish the hazardous energy controls to mitigate exposure to hazards for the scope of work that the employee will be performing. While a clearance is mainly for protection of personnel, it may also provide protection for equipment. The F-HECP must designate when a clearance is required. At a minimum, a clearance is required for:

- 1) Electrical circuits 600 volts or greater;
- 2) Spaces protected by a CO₂ system;
- 3) Water passages and waterways (as defined in Appendix A);
- 4) Work where personnel are exposed to a pinch or crush hazard such as turbine runners, generator rotors, wicket gates, wicket gate linkages, gates and servo systems;
- 5) High pressure systems (see Section 1.9):
 - a. air;
 - b. water; and
 - c. oil.
- 6) Equipment (or system) that requires more than four energy isolation devices;
- 7) Contractor work involving isolation of hazardous energy when the above requirements apply. The procedure for working with contractors is identified in Section 16, Special Work Permits.

11.2 Use of Personal Locks and Personal Tags

- 1) Personal locks and personal tags must not be used on the energy isolation devices that establish the limits of the clearance.
- 2) For a clearance, Authorized Employees must affix a personal lock to the clearance lockbox after obtaining permission from the appropriate Job Supervisor before work begins.
- 3) An employee must NOT work under the protection of another employee's personal lock (tag).

11.3 Procedure

A clearance procedure establishes the energy isolation and control of equipment and/or systems for employee protection by allowing employees to place a single personal lock on a clearance lockbox. The process identifies system restoration and procedures to be used when equipment

or systems cannot be returned to full service. The requirements identified in Section 5.5.8 must be followed when filling out and developing a SPF (POM-216).

When a new clearance can use one or more energy isolation devices from an existing clearance, there is an option to utilize the existing clearance's lockbox as a key control device to capture those energy isolation devices. When the option to utilize an existing clearance's lockbox is exercised, Section 11.3.7, Additional Requirements must be followed.

11.3.1 Request clearance.

- 1) The Job Supervisor must:
 - a. Determine if the facility requirements indicate the necessity of a clearance by preparation of a JHA;
 - b. Ensure, by the use of drawings, standing operating procedures, technical papers, or other technical references that the equipment to be placed under clearance will be effectively isolated for the requested scope of the work to be performed. This includes identifying corrective measures necessary to prevent re-accumulation of stored energy to a hazardous level. The scope of work must be sufficiently defined that personnel can adequately determine the limits of the clearance; and
 - c. Submit the clearance request (POM-212) to the Operations Supervisor.

Note: Specific requirements for submitting requests and timelines will be identified in the F-HECP.

11.3.2 Prepare and place clearance.

- 1) The Operations Supervisor, upon receipt of a clearance request, must:
 - a. Determine that the equipment (or system) affected by the clearance request can be scheduled for an outage;
 - b. Verify, by the use of drawings, standing operating procedures, technical papers, or other technical references, that the equipment to be placed under clearance will be effectively isolated for the requested scope of the work to be performed. This includes identifying corrective measures necessary to prevent re-accumulation of stored energy to a hazardous level;
 - c. Coordinate, as necessary, with appropriate agencies and other entities for isolation of systems that are to be cleared;
 - d. Prepare a SPF for placement. (The SPF for removal can be prepared concurrently.) Previously prepared clearances may be used as a reference;
 - e. Ensure that the SPF identifies each of the energy isolation devices and the placement of each lock/tag;
 - f. Sign and date the SPF;
 - g. Ensure a second Operations Supervisor second checks the prepared SPF and signs and dates the SPF;

- h. Conduct a job briefing and complete a JHA with the Switchman to identify hazards associated with the switching; and
 - i. Direct the Switchman to perform the switching utilizing the JHA and the SPF.
 - 2) Switchman must:
 - a. Follow the six basic steps of switching when performing operations in the sequence on the SPF;
 - b. Accomplish switching by using the six basic steps of switching;
 - c. Stop the switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:
 - i. The instruction is not clearly understood;
 - ii. The instruction is believed to be incorrect;
 - iii. At any point in the switching, an unexpected operation of equipment or other action occurs;
 - iv. A device is found in a position other than indicated on the SPF; or
 - v. A dangerous condition could result by performing a switching step.
 - d. Verify the effectiveness of each energy isolation device's clearance lock (tag).
 - i. The clearance lock (tag) must be attached directly to each energy isolation device whenever possible.
 - ii. Where a clearance tag cannot be affixed directly to the energy isolation device, the clearance tag must be located as close as safely possible to the energy isolating device, in a position that will be immediately obvious to anyone attempting to operate the device.
 - iii. When locks cannot be utilized, or tags are utilized, additional means must be employed to provide a level of personal protection equivalent to that provided by a lock. Examples include:
 - 1. Placing the clearance tag in a manner that inhibits operation of the energy isolation device;
 - 2. Removing fuses or an isolating circuit mechanism;
 - 3. Opening an extra disconnecting device;
 - 4. Removing a valve handle; or
 - 5. Blocking a controlling switch.
 - e. Record on the SPF:
 - i. The time at which each step is completed;
 - ii. Lock or tag number placed; and
 - iii. The switchman's initials.
 - f. Use an Operations Lock to secure the key for Clearance Lock(s) in a Clearance Lockbox. This establishes and maintains the operational configuration management control by Operations. The Switchman's personal lock may be used for this purpose if established in the F-HECP; and
 - g. Report to the Operations Supervisor that switching is complete.
 - 3) The Operations Supervisor must:
 - a. Record the clearance placement action in the station log; and

- b. Notify the Job Supervisor that the clearance has been placed.

11.3.3 Accept and issue clearance.

- 1) The Job Supervisor must:
 - a. Obtain a copy of the SPF from the Operations Supervisor;
 - b. Place their personal lock on the clearance lockbox to secure the clearance key(s);
This provides exclusive control for the Job Supervisor;
 - c. Verify the position of each energy isolation device;
 - d. Verify the placement of each clearance lock and tag;
 - e. Verify the effectiveness of each clearance lock (tag);
 - f. Make appropriate tests to verify isolation and de energization of the equipment (or system);
 - g. Verify that stored energy has not re accumulated in the equipment (or system);
 - h. Contact the Operations Supervisor for resolution if any of the following are encountered:
 - i. A device is found in a position other than that indicated on the SPF; or
 - ii. A dangerous condition exists.
 - i. Inform the Operations Supervisor that the clearance is adequate, and assume full responsibility for the clearance; and
 - j. Sign the SPF, documenting acceptance of the clearance;
- 2) The Operations Supervisor must:
 - a. Sign and date the SPF, issuing the clearance to the Job Supervisor; and
 - b. Log issuing the clearance in the station log.

11.3.4 Working under a clearance.

- 1) The Job Supervisor must:
 - a. Verify, as appropriate, that stored energy has not re accumulated to a hazardous level in the equipment (or system);
 - b. Grant, as appropriate, permission to Authorized Employees to work under their clearance, including:
 - i. Reviewing and signing the JHA;
 - ii. Verifying that the energy isolation devices that establish the limits of the clearance are understood and the work can be safely performed; and
 - iii. Verifying that the Authorized Employees understand their responsibility to maintain awareness of the clearance status while working;
 - c. Keep the Operations Supervisor informed as to the status of the work;
 - d. Promptly notify each Authorized Employee working under the clearance of any changes in condition or status of the equipment.
- 2) The Authorized Employee must:

- a. Obtain permission from the Job Supervisor to work under their clearance, including:
 - i. Reviewing the JHA;
 - ii. Placing their personal lock on the clearance lockbox to secure the clearance key(s). This provides exclusive control for the Authorized Employee;
 - iii. Verifying that they understand the energy isolation devices that establish the limits of the clearance;
 - iv. Visually verify the position of each energy isolation device;
 - v. Verify the placement of each clearance lock and tag;
 - vi. Maintaining awareness of the clearance status while working.
- b. Contact the Job Supervisor for resolution if any of the following are encountered:
 - i. A device is found in a position other than that indicated on the SPF; or
 - ii. A dangerous condition exists.
- c. Request from the Job Supervisor any additional necessary protection.

11.3.5 Placement of Personal Protective Grounds

Note: When personal protective grounds are required to perform work per FIST 5-1, and temporary removal is necessary to perform testing, only the initial installation and final removal must be documented on the SPF. If the grounds are relocated to a different location, then they must be documented as a new line item on the SPF.

- 1) When personal protective grounds are required per FIST 5-1, Personal Protective Grounding for Electric Power Facilities and Power Lines, the Job Supervisor must:
 - a. Ensure a written procedure is used for personal protective grounding;
 - b. Direct a Qualified Electrical Employee to place the personal protective ground(s);
 - c. Ensure placement of grounds is recorded on the SPF cover page and includes:
 - i. The personal protective ground identification number(s);
 - ii. Who placed the personal protective ground(s);
 - iii. Date and time of placement; and
 - iv. Initial location of the placement of the Personal Protective Grounds.

Note: The complexities of equipment (or system) maintenance may require a Job Supervisor to have personal protective grounds removed without releasing the clearance.

11.3.6 Release and remove clearance.

Upon completion of their work,

- 1) Authorized Employees must:
 - a. Remove all equipment, tools, and material used from the work area;

- b. With concurrence of the Job Supervisor, ensure that personal protective grounds have been removed using an approved procedure and ensure the removal is documented on the SPF (as required);
- c. Remove their personal lock from the clearance lockbox;
- d. Notify the Job Supervisor that the work area is clear of their equipment, tools, and material; and
- e. Remove their lock from the clearance lockbox.

Upon completion of all work,

- 1) The Job Supervisor must:
 - a. Notify all involved Authorized Employees of the intent to release the clearance;
 - b. Inspect the work area(s) to ensure that:
 - i. Nonessential items have been removed from the equipment;
 - ii. The components are operationally intact; and
 - iii. All personnel are in the clear.
 - c. When personal protective grounds were used, ensure all personal protective grounds have been removed and properly recorded on the SPF cover page and include:
 - i. Who removed the personal protective ground(s); and
 - ii. Date and time of removal.
 - d. Notify the Operations Supervisor that all work is complete, including all tool and equipment removal;
 - e. Remove their personal lock from the clearance lockbox;
 - f. Sign the SPF, documenting release of the clearance to the Operations Supervisor.

Note: It is understood that the complexities of equipment maintenance may require a Job Supervisor to release a clearance when the equipment is not ready for return to normal service. In these situations, the conditions must be identified and reported to the Operations Supervisor.

- 2) The Operations Supervisor must:
 - a. Log the date and time of release of the clearance on the SPF cover page;
 - b. Record the release of the clearance in the station log;
 - c. Prepare a SPF for removal, if not previously completed;
 - d. Ensure that the SPF for removal identifies each of the energy isolation devices, the removal of each lock/tag and positioning of the device as required;
 - e. Sign and date the SPF;
 - f. Ensure a second Operations Supervisor second checks the prepared removal SPF, signs and dates;
 - g. Conduct a job briefing and review the JHA with the Switchman to identify hazards associated with the switching;
 - h. Coordinate with appropriate agencies and other entities for system restoration, as necessary; and
 - i. Direct the Switchman to perform the switching utilizing the JHA and the SPF.
- 3) The Switchman must:

- a. Remove the operations lock from the lockbox (if used in the step to secure the clearance key during Job Supervisor isolation device checks) and obtain the key(s) for the clearance lock(s);
 - b. Perform switching by using the six basic steps of switching in the sequence listed on the SPF;
 - c. Stop the switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:
 - i. The instruction is not clearly understood;
 - ii. The instruction is believed to be incorrect;
 - iii. At any point in the operations, an unexpected relay, breaker, or other action occurs;
 - iv. A device is found in a position other than indicated on the SPF; or
 - v. Performing a step could create a dangerous condition.
 - d. Record, on the SPF:
 - i. The number of the lock or tag removed;
 - ii. The time at which each step is completed; and
 - iii. The Switchman's initials.
 - e. Report to the Operations Supervisor upon completion of switching.
- 4) The Operations Supervisor must record the clearance removal action in the station log.

11.3.7 Additional Requirements (Lockbox Option)

When a new clearance utilizes an existing clearance's lockbox as key control, the following requirements must be met in addition to Section 11.3.1 – 11.3.6, and described in the F-HECP. The additional steps below are written for a single existing clearance with its lockbox and isolation devices, but the process may include multiple existing clearances.

Prepare and place clearance:

- 1) The Operations Supervisor must:
 - a. Identify which energy isolation devices can be used from an existing clearance;
 - b. Obtain permission from the Job Supervisor of the existing clearance to place a clearance lock on their clearance lockbox; and
 - c. Develop a SPF that identifies:
 - i. Existing clearance number, clearance title, and the key numbers captured in the existing clearance; and
 - ii. All associated energy isolation devices under the existing clearance that the new clearance will use, including the anticipated energy isolation device position and lock set number.
- 2) The Switchman must place a clearance lock on the existing clearance lockbox and record the lock number.
- 3) The new clearance must utilize its own lock box to capture keys.

Accept and issue clearance:

The Job Supervisor for the new clearance must verify each energy isolation device identified on the new clearance including those captured by the existing clearance lockbox.

NOTE: If the Job Supervisor has previously verified the isolation devices associated with the existing clearance and is presently locked on to that clearance, then they do not have to verify those devices again. They must verify each energy isolation device on the new clearance that was not part of the existing clearance.

The Authorized Employee must verify each energy isolation device identified on the new clearance including those captured by the existing clearance lockbox.

NOTE: If an Authorized Employee has previously verified the isolation devices associated with the existing clearance and is presently locked on to that clearance, then they do not have to verify those devices again. They must verify each energy isolation device on the new clearance that was not part of the existing clearance.

11.4 Identical Clearance

11.4.1 Purpose.

This is the process to issue two or more concurrent clearances on the same equipment requiring the same energy isolation devices that establish the limits of the clearance and exactly the same clearance lock(s) and tag(s) application.

11.4.2 Procedure.

The Job Supervisors and Operations Supervisors involved with an identical clearance must follow the clearance procedure defined in the F-HECP.

- 1) Job Supervisors have the responsibility to discuss and coordinate the work to be performed.
- 2) All Job Supervisors must assume full responsibility for their clearance.
- 3) The SPF must be marked distinctly to indicate an identical clearance. The same clearance number must be assigned a different suffix letter (A, B, C, etc.) or suffix number (1, 2, 3, etc.) to identify each additional clearance.
- 4) No additional clearance lock or tag devices can be placed, and no protection is to be removed from the equipment until ALL clearances have been released.
- 5) Identical clearances may be released in any order.

11.5 Changing Job Supervisor.

When the Job Supervisor leaves the facility for an extended period, a new Job Supervisor must be assigned. When another Job Supervisor is assigned responsibility for the work being performed, the new Job Supervisor must follow the process for requesting and accepting an identical clearance prior to the original Job Supervisor releasing the original Clearance.

The F-HECP must designate the time constraints for leaving the facility that require a new Job Supervisor be assigned.

11.6 Clearances at Remote Sites

Clearances at remote sites, where communication with the Operations Supervisor is not possible, will be conducted as described in the F-HECP. Such procedures must meet the requirements within this document.

11.7 Limits of the Clearance (Changing Scope)

The limits of a clearance cannot be changed; however, the scope of the work may change such that it requires a change in the energy isolation devices.

The Job Supervisor must request a new clearance. This change can be accomplished in one of two ways.

- 1) **Preferred process:**
 - a. Prepare and place the new clearance;
 - b. Accept and issue the new clearance; and
 - c. Release and remove the original clearance.
- 2) **Alternative process:**
 - a. Prepare a SPF for placement of the new clearance, listing each clearance lock (tag) being transferred and any new energy isolation devices;
 - b. Prepare a SPF for removal of the original clearance, listing each clearance lock (tag) being transferred and each clearance lock (tag) that is to be removed;
 - c. Release the original clearance;
 - d. Complete switching for placement, verifying that the transferred clearance lock(s) or tag(s) is in place;
 - e. Complete switching for removal, leaving the transferred clearance lock(s) or tag(s) in place; and
 - f. Complete the “accept and issue clearance” procedure above.

Note: It is understood that the complexities of equipment maintenance may require a Job Supervisor to release a clearance when the equipment is not ready for return to

normal service. In these situations, the conditions must be identified and reported to the Operations Supervisor.

11.8 Testing Under a Clearance

Checks and tests on an energy isolation device at the limits of a clearance are not permitted on an energy isolation device secured with a clearance lock (tag).

Checks and tests on equipment (or systems) protected by a clearance are permitted when:

- 1) A JHA has been prepared;
- 2) A written test procedure has been prepared;
- 3) A job briefing is performed with all authorized employees;
- 4) All administrative controls including barriers or signs have been implemented to identify and protect against the induced hazardous energy; and
- 5) All work activity affected by the induced hazardous energy has been suspended.

12.0 Hot Line Orders

12.1 Use

A hot line order permits work to be done on or near energized electrical equipment for transmission and/or distribution lines.

The electrical equipment identified in a hot line order is to be considered energized or “hot.” Hot line orders are established by removing from service all automatic reclosing features capable of energizing the equipment by tagging these features and by placing a hot line tag on the appropriate control switches of all circuit breakers connected to the equipment, locally and by means of supervisory control. An operations lock may be used in conjunction with a hot line tag.

A hot line order must **NOT** be issued where work is being performed on the line’s:

- 1) Protective relays;
- 2) Control circuits; and
- 3) Communication equipment.

Work must **NOT** be performed on the following systems, which would compromise the tripping of any circuit breakers involved in the hot line order:

- 1) Protective relays;
- 2) Control circuits; and
- 3) Communication equipment.

Use of the operations lock must be as described in the F-HECP.

12.2 Operating Under a Hot Line Order

- 1) Contact must be made with the Job Supervisor before closing breakers that could re-energize the equipment.
- 2) The Operations Supervisor and the Job Supervisor must maintain communication.
- 3) The Job Supervisor holding a hot line order must remain at the worksite at all times while work is being performed.

12.3 Procedure

- 1) **Request hot line order:**
 - a. The Job Supervisor must:
 - i. Determine if the facility requirements indicate the necessity of a hot line order, including preparation or review of the JHA;

- ii. Ensure, by the use of drawings, SOPs, technical papers, or other technical references, that a hot line order will be effective for performing the work on the equipment; and
- iii. Submit the outage request to the Operations Supervisor.

Note: Specific requirements for submitting requests and timelines will be identified in the F-HECP.

2) Prepare and place hot line order:

- a. The Operations Supervisor must, upon receipt of a clearance request:
 - i. Determine that the equipment (or system) affected by the clearance request can be scheduled for a hot line order;
 - ii. Verify, by the use of drawings, SOPs, technical papers, or other technical references, that a hot line order will be effective for performing the scope of work;
 - iii. Coordinate the lines that are to be placed under the hot line order with appropriate agencies and other entities;
 - iv. Prepare a SPF for placement. (The SPF for removal can be prepared concurrently.) Previously prepared hot line orders may be used as a reference.
 - v. Ensure the SPF is checked, signed and dated by another Operations Supervisor.
- b. The Operations Supervisor must:
 - i. Conduct a job briefing with the authorized Switchmen to include a review of hazards, work procedures, personal protective clothing and equipment (PPE) requirements, special precautions, etc. Any questions regarding the completeness or correctness of the SPF must be resolved before proceeding.
 - ii. Direct the Switchman to perform the switching.
- c. The Switchman must:
 - i. Perform operations in the sequence listed on the SPF;
 - ii. Accomplish switching by using the six basic steps of switching;
 - iii. Stop switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:
 - 1. The instruction is not clearly understood;
 - 2. The instruction is believed to be incorrect;
 - 3. At any point in the operations, an unexpected relay, breaker, or other action occurs;
 - 4. A device is found in a position other than indicated on the SPF.
 - iv. Record on the SPF:
 - 1. The time at which each step is completed;
 - 2. The number of the tag placed; and
 - 3. The Switchman's initials.

- v. Report to the Operations Supervisor upon completion of switching.
- d. The Operations Supervisor must:
 - i. Record the hot line order placement action in the station log; and
 - ii. Notify the Job Supervisor that the hot line order has been placed.
- 3) To accept and issue a hot line order:**
 - a. The Job Supervisor must:
 - i. Obtain a copy of the SPF from the Operations Supervisor;
 - ii. Verify that the automatic reclosing features are turned off;
 - iii. Verify the placement of all hot line tags;
 - iv. Contact the Operations Supervisor for resolution if a device is found in a position other than that indicated on the SPF;
 - v. Inform the Operations Supervisor that:
 - 1. The hot line order is adequate; and
 - 2. Responsibility for the hot line order will be accepted.
 - vi. Sign the SPF, documenting acceptance of the hot line order.
 - b. The Operations Supervisor must:
 - i. Sign and date the SPF, documenting issuance of the hot line order to the Job Supervisor;
 - ii. Log issuing the hot line order in the station log.
- 4) To release and remove a hot line order:**
 - a. The Job Supervisor must:
 - i. Notify all Authorized Employees of the intent to release the hot line order.
 - ii. Inspect the work area(s) to ensure that:
 - 1. Nonessential items have been removed from the equipment;
 - 2. The components are operationally intact, and
 - 3. All personnel are in the clear.
 - iii. Notify the Operations Supervisor of the status of the equipment; and
 - iv. Release the hot line order to the Operations Supervisor by signing and dating the SPF.
 - b. The Operations Supervisor must:
 - i. Record the release of the hot line order in the station log;
 - ii. Prepare a SPF for removal if not already complete;
 - iii. Ensure the SPF is second checked by a second Operations Supervisor;
 - iv. Coordinate with appropriate agencies and other entities for system restoration;
 - v. Conduct a job briefing with the Switchman, to include a review of hazards, work procedures, requirements for PPE, special precautions, etc. Any questions regarding the completeness or correctness of the SPF must be resolved before proceeding; and
 - vi. Direct the Switchman to perform the switching.
 - c. The Switchman must:
 - i. Perform operations in the sequence listed on the SPF;

- ii. Accomplish switching by using the six basic steps of switching;
- iii. Stop switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:
 - 1. The instruction is not clearly understood;
 - 2. The instruction is believed to be incorrect;
 - 3. At any point in the operations, an unexpected relay activation, breaker trips, or other unexpected action occurs;
 - 4. A device is found in a position other than indicated on the SPF.
- iv. Record on the SPF:
 - 1. The time at which each step is completed;
 - 2. The number of the removed tag; and
 - 3. The Switchman's initials.
- v. Report to the Operations Supervisor upon completion of switching.
- d. The Operations Supervisor must record the hot line order removal action in the station log.

12.3.1 Procedures for a line that has tripped out while under a hot line order.

- 1) The Operations Supervisor must contact the Job Supervisor holding the hot line order to determine if it is safe to re-energize the line.
- 2) The Job Supervisor must:
 - a. Immediately order all personnel and equipment clear of the line;
 - b. Ascertain if the line within his work area can be safely re-energized; and
 - c. Contact the Operations Supervisor;
- 3) The Operations Supervisor must direct the Switchman to close the circuit breakers.
- 4) The Switchman must:
 - a. Remove the hot line tag from the control switch and operate the control switch to close the circuit breaker.
 - b. After the circuit breaker has been reclosed, replace the hot line tag on the control switch if the hot line tag is to be continued.
- 5) The Operations Supervisor must:
 - a. Record the pertinent information on the trip and closure in the station log.
 - b. Inform the Job Supervisor that the circuit breakers have been closed and that the line is energized.

12.3.2 Changing Job Supervisor for a hot line order.

When the Job Supervisor leaves the worksite while the work is in progress, a new Job Supervisor must be assigned, or the work must stop. The F-HECP will describe the process for changing the Job Supervisor.

12.3.3 Change Scope of hot line order.

If it becomes necessary to alter the hot line order, the Operations Supervisor must notify the Job Supervisor, who will then request a new hot line order identifying the changes.

13.0 Interconnected System Clearances and Hot Line Orders

13.1 Use

Interconnected system clearances or hot line orders provide for the protection of personnel at points of interconnection between Reclamation and non-Reclamation facilities.

An interconnected system clearance or hot line order 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 or hot line order on another system, in accordance with the appropriate operating agreements.

13.2 Procedure

13.2.1 Issue interconnected system clearance or hot line order.

- 1) The non-Reclamation Operations Supervisor will request the appropriate required protection on the Reclamation system.

Note: Each facility must use the uniform line identifiers or defined equipment identifiers when communicating and coordinating with outside agencies.

- 2) The Reclamation Operations Supervisor must:
 - a. Place the clearance or hot line order in accordance with the established procedures on the requested equipment.
 - b. Use three-part communication to state clearly to the non-Reclamation Operations Supervisor exactly what protection has been provided. The non-Reclamation Operations Supervisor must restate the exact protection provided and state that he is satisfied that the protection meets the requirements. The Reclamation Operations Supervisor must confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood.
 - c. Issue the interconnected system clearance or hot line order to the non-Reclamation Operations Supervisor.
 - d. Document this action on the SPF and in the station log.

13.2.2 Receive interconnected system clearance or hot line order.

- 1) The Reclamation Operations Supervisor will request the appropriate protection on the non-Reclamation system.

- 2) The non-Reclamation Operations Supervisor will:
 - a. Place the clearance or hot line order in accordance with their established procedures on the requested equipment.
 - b. Use three-part communication to state clearly to the Reclamation Operations Supervisor exactly what protection has been provided.
- 3) The Reclamation Operations Supervisor must restate the exact protection provided and state that he is satisfied that the protection meets the requirements.
- 4) The non-Reclamation Operations Supervisor must confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood.
- 5) The Reclamation Operations Supervisor will:
 - a. Accept the interconnected system clearance or hot line order from the non-Reclamation Operations Supervisor;
 - b. Document this action on the SPF; and
 - c. Make the appropriate entry in the station log.

13.2.3 Release interconnected system clearance or hot line order.

The release of the interconnected system clearance or hot line order will be initiated by the appropriate Operations Supervisor.

- 1) Three-part communication must be used;
- 2) Release actions must be documented on the SPF and in the station log; and
- 3) When appropriate, remove the clearance or hot line order in accordance with the established procedures on the requested equipment.

14.0 Hazardous Energy Work Permits

14.1 General

- 1) All work should be performed on systems that have been isolated from all forms of hazardous energy. Certain jobs do not allow for this isolation. In these situations, every effort must be made to:
 - a. minimize the hazards;
 - b. add engineering controls;
 - c. add administrative controls (signage, training, safety meetings, boundaries); and
 - d. use PPE.

All employees need to be aware of the hazards that remain.

- 2) Hazards may be any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other form of energy that could cause injury to personnel if not de-energized. Possible sources include, but are not limited to:
 - a. Electrical panels or equipment with available arc flash energy over 1.2 calories per centimeter squared (cm²);
 - b. Rotating equipment;
 - c. Compressed air systems;
 - d. Tensioned springs;
 - e. Pressurized hydraulic systems;
 - f. Active waterways;
 - g. High pressure water systems;
 - h. Servo motor or wicket gate arms;
 - i. Chlorine and other chemical systems;
 - j. Loads suspended from crane or other lifting devices;
 - k. Falling objects (rocks or equipment);
 - l. Ionizing radiation such as x-rays;
 - m. Non-ionizing radiation such as laser and microwave radio frequency energy;
 - n. Station service battery banks; and
 - o. Heated water or steam.
- 3) The RO must be aware of all forms of hazardous energy within the work area and mitigate the potential for injury. The RO may authorize energized work by completing an HEWP where it can be demonstrated that:
 - a. De energization introduces additional or increased hazards. Some examples may include but not limited to:
 - i. De-energizing an electrical panel may result in loss of power to the life support equipment;
 - ii. Loss of Power to a continuously running sump pump may result in flooding; or
 - iii. Emergency Alarm system in an occupied building may deactivate; or

- b. The task to be performed is infeasible in a de-energized state due to equipment design or operational limitations. An example may be performing a diagnostic test or trouble shooting where equipment operation is required; or
- c. The hazards are mitigated to an acceptable level by other control measures specified on the HEWP. Electrical hazards are identified in FIST 5-14, *Electrical Safety Program*. Hazards such as a broken shear pin replacement with the unit operational, must document how personnel will be kept clear of pinch and crush hazards.

Note: Inconvenient and infeasible are two different terms and must not be used interchangeably. As an example, if there is a need for climbing up and down a portable and tall ladder to operate a switch to de-energize a circuit, it could be inconvenient but certainly not infeasible. Inconvenience must not be used to justify energized work.

Note: Potential loss of lighting is not typically considered a justification for energized work.

14.2 Hazardous Energy Work Permit Exceptions

- 1) For the following exceptions, an HEWP is not required if a Qualified Employee is provided with and uses appropriate safe work procedures, and PPE is used as required:
 - a. Testing, troubleshooting, or voltage measurement, if no other unidentified electrical hazards exist that the employee might be exposed to.
 - b. Thermography and visual inspections if the restricted approach boundary is not crossed.
 - c. Access to and egress from an area with energized electrical equipment if no electrical work is performed and the restricted approach boundary is not crossed.
 - d. General housekeeping and miscellaneous nonelectrical tasks if the restricted approach boundary is not crossed.
- 2) Work that falls under the exceptions listed above is permitted without an HEWP, provided:
 - a. A JHA is prepared to identify safe work practices, hazards involved, mitigation techniques applied, and proper PPE; and
 - b. A job plan (procedure) is prepared with sufficient detail to allow work crews to perform the work safely.

14.3 Procedure

- 1) The supervisor or foreman must:
 - a. Determine if the facility requirements indicate the necessity of an HEWP. This step includes preparation or review of the JHA and job plan;

- b. Ensure, by the use of drawings, SOPs, technical papers, or other technical references that the procedure utilizing the HEWP will be effective for the work to be performed;
 - c. Prepare the HEWP (POM-213); and
 - d. Submit the HEWP for review and concurrence by the individual(s) identified in the F-HECP, by title, who perform the stated duties. These are identified in the signature block on the HEWP. The approval must include personnel who perform the following responsibilities, at a minimum:
 - i. Qualified Employee: Will provide input for developing a detailed job plan to be used in performing the scope of work identified;
 - ii. Statement that the requested work can be performed safely in accordance with Reclamation technical standards; and
 - iii. Statement that the job plan includes all safe work practices to be employed, necessary personnel, and all protective equipment to safely perform the work.
- 2) RO or designee:
- a. will make the final decision at the facility level, that the work must be accomplished in an energized state;
 - b. all mitigation techniques have been evaluated for the hazards; and
 - c. the work can be accomplished safely with minimal risk to the employee.
- 3) The HEWP will state an expiration date not to exceed one year from the date signed.

15.0 Tagging of Equipment Operated by Supervisory Control

When a clearance, hot line order, or special condition is issued on equipment that is operated by a supervisory control system (SCADA / ICS) that includes a display screen(s):

- 1) The status of such equipment must be indicated by means of an appropriate symbol displayed on all display screens that serve as supervisory control points;
- 2) Each SPF involving supervisory controlled equipment must reference the placement of supervisory control information tags on the display screen;
- 3) A clearance tag or hot line tag on the display screen is for information only and **MUST NOT BE RELIED UPON TO PROTECT PEOPLE**;
- 4) If a hot line order and a clearance are to be in place simultaneously, and the supervisory control with a display screen cannot indicate both the clearance tag and a hot line tag associated with one device at the same time, the hot line tag must take precedence over the clearance tag. If either action is removed, the appropriate remaining tag indication must continue to be displayed; and
- 5) Special conditions related to unit operating conditions or where notifications to the transmission system operator are required will be indicated on the display screen when possible.

16.0 Special Work Permits (SWP)

This section addresses Special Work Permits where the work requires hazardous energy control procedures to be established under the F-HECP. RSHS Section 15 describes the requirements to authorize Contractors or Authorized Non-Reclamation personnel (Section 18) to conduct work on or near equipment in a Reclamation facility.

For SWPs, the term Contractor will also apply to Authorized Non-Reclamation personnel when a contractual instrument does not exist.

16.1 General

- 1) Contractors performing work at Reclamation operated and maintained facilities must comply with the F-HECP.
- 2) A SWP (POM-215) documents the coordination between Reclamation and a contractor to authorize work when a hazardous energy control procedure is required.
- 3) FIST 1-1 identifies the minimum requirements for the HECP. The F-HECP must designate additional local requirements for hazardous energy control procedures associated with contractor work. The Reclamation Representative and the Authorized Reclamation Employee may be the same individual as allowed by the F-HECP and based on the scope of work.
- 4) Facilities will define a process within their F-HECP to designate the Reclamation Representative and the Authorized Reclamation Employee based on the scope of work or contract requirements.
- 5) The Contractor's Workplace Representative must be trained on Reclamation's F-HECP and authorized by the RO and placed on the EAL. This will allow the Contractor's Workplace Representative to place their lock for the hazardous energy control procedure utilized.
- 6) Reclamation Representative must be familiar with the contractor's HECP per RSHS Section 15.

16.2 Procedure for Issuing Special Work Permits

- 1) The Contractor's Workplace Representative will identify to the Reclamation Representative the need for equipment isolation. The Contractor's Workplace Representative must review the plan for accomplishing the work with the Reclamation Representative in such detail as necessary for the Reclamation Representative to determine the hazardous energy isolation.
- 2) The Reclamation Representative will communicate the need for equipment isolation to the Reclamation Authorized Employee.
- 3) The Reclamation Representative will prepare a SWP.

- 4) The hazardous energy control procedure described in this document must be followed.
- 5) The Reclamation Representative and the Contractor's Workplace Representative must inspect the worksite to verify the adequacy of the protection provided.
- 6) The Contractor's Workplace Representative must place a lock on the Reclamation hazardous energy control lockbox or in the case of a personal lockout the Contractor's Workplace Representative's lock(s) will be placed on the isolation devices. The Contractor's Workplace Representative's key will be secured in accordance with the contractor's HECP.
- 7) A unique number for each special work permit will be assigned. A special work permit will be issued for each hazardous energy control procedure.
- 8) The SWP will be signed by the parties. No work will be done until an SWP has been signed. No work will be done in an area not specifically covered by the SWP.
- 9) The F-HECP will state where the signed original SWP will be maintained. Copies will be provided to the Reclamation Representative and Contractor's Workplace Representative.

16.3 Placing and Removal of Personal Protective Ground(s)

- 1) If, in the opinion of the Reclamation Representative and Reclamation Authorized Employee, a contractor is sufficiently knowledgeable in and adequately equipped for the application of personal protective grounding, the contractor's Qualified Electrical Employee may place and remove personal protective grounds at the work site in accordance with applicable safety standards and FIST Volume 5-1, under the observation of an Authorized Reclamation Employee. The Contractor's Workplace Representative will coordinate the placement or removal of all contractor's personal protective grounds with the appropriate Reclamation personnel.
- 2) If, in the opinion of Reclamation Representative and the Authorized Reclamation Employee, a contractor is not sufficiently knowledgeable in or adequately equipped for the application of personal protective grounding, the contractor is not allowed to place and remove personal protective grounds. A Reclamation Authorized Employee must direct a Qualified Electrical Employee to place or remove all required personal protective grounds. The Authorized Reclamation Employee must document the placement or removal of all personal protective grounds placed to protect the contractor.

16.4 Procedure for Releasing Special Work Permits

- 1) Upon completion of all work, the Contractor's Workplace Representative must:
 - a. Notify the Reclamation Representative that:
 - i. All personnel are clear;
 - ii. All materials have been removed;
 - iii. The work is complete; and
 - iv. All personal protective grounds are removed.

- b. Sign the SWP, releasing it to the Reclamation Representative.
- 2) The Reclamation Representative must verify:
 - a. The work is complete;
 - b. All workmen are clear;
 - c. All materials have been removed from the work site; and
 - d. All personal protective grounds have been removed.
- 3) The Reclamation Representative must notify the Authorized Reclamation Employee that the work is complete and sign the release of the SWP.
- 4) The Authorized Reclamation Employee verify that the work is complete and sign the release of the SWP.

16.5 Changing Scope of Work Under a Special Work Permit

Should it be necessary to make changes to the scope of work under the SWP (change in protection needed, etc.), a new SWP must be issued and the existing SWP released.

16.6 Change in Representative for a Special Work Permit

In the event that an original representative (Contract's Workplace Representative, Reclamation Representative, or Authorized Reclamation Employee) is not available to release the existing SWP, the new representative must sign the release of the existing SWP. The new SWP must be issued before the existing SWP is released.

17.0 Reclamation Non-Facility Personnel

Reclamation non-facility personnel provide services throughout Reclamation at various types of facilities. These personnel must be trained to the level necessary under the FIST 1-1 and F-HECP requirements for each facility where work is performed.

17.1 General

- 1) Reclamation non-facility personnel who perform work at Reclamation facilities must comply with the F-HECP for each facility where work is performed.
- 2) The F-HECP defines the qualification levels for personnel to perform work. The F-HECP must designate any additional local facility requirements for Reclamation non-facility personnel work.
Note: Field offices will not accept responsibility for lack of qualifications and training from non-facility personnel prior to arrival for addition to the EAL.
- 3) HECP Authorized employee training must be completed by Reclamation non-facility personnel. The training must be documented in DOI Talent and a copy of the transcript must be provided to the facility where work will be performed. The supervisor of the employee is responsible for ensuring the training is completed and documented prior to the employee performing any work.
- 4) Reclamation non-facility personnel will review the facility's F-HECP upon arrival at the facility, making them aware of any special requirements that may apply to the scope of work they will be performing. This will allow the Reclamation non-facility personnel to be placed on the EAL.

18.0 Authorized Non-Reclamation Personnel

18.1 When a Formal Agreement Exists

Non-Reclamation personnel may be authorized to perform tasks as described in the terms of a formal agreement, such as a memorandum of agreement or memorandum of understanding.

Procurement or construction (Federal Acquisition Regulations) contracts are generally not included in this section. Examples of formal agreements include, but are not limited to:

- 1) The Master Agreement dated March 26, 1980, between the Western Area Power Administration (Western) and Water and Power Resources Service (Reclamation); and
- 2) Operating agreements associated with the Master Agreement, for example:
 - a. Joint Operating Agreement (Lower Colorado Region); and
 - b. Coordinated Operations and Maintenance Agreement (Mid Pacific Region).

18.2 When a Formal Agreement Does Not Exist

When a formal agreement does not exist, all work must be performed under the requirements of an SWP.

18.3 Requirements

- 1) The non-Reclamation organization will transmit, in writing, to the RO or their designated representative a list of those individuals deemed to be authorized employees and the functions they are to perform including:
 - a. Requesting or accepting clearances;
 - b. Requesting or accepting hot line orders; and
 - c. Switching.
- 2) Reclamation must annually train, examine, and authorize employees on the F-HECP and must document this training.
- 3) Non-Reclamation authorized employees will be listed on a non-Reclamation EAL and maintained as required in the F-HECP.
- 4) The RO or their designated representative will transmit the non-Reclamation EAL in writing to the non-Reclamation organization.
- 5) All work must be coordinated with the Reclamation Operations Supervisor.
- 6) The Reclamation Operations Supervisor must be notified before removing equipment from service and before returning it to service.

Appendix A – Definitions

Approved: Acceptable to the authority having jurisdiction.

Arc Flash Hazard: A source of possible injury or damage to health associated with the release of energy caused by an electric arc.

Informational Note No 1: The likelihood of occurrence of an arc flash incident increases when energized electrical conductors or circuit parts are exposed or when they are within equipment in a guarded or enclosed condition, provided a person is interacting with the equipment in such a manner that could cause an electric arc. An arc flash incident is not likely to occur under normal operating conditions when enclosed energized equipment has been properly installed and maintained.

Informational Note No 2: See NFPA 70E Table 130.5(C) for examples of tasks that increase the likelihood of an arc flash incident occurring.

Authorized 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. An Authorized Employee must be authorized by the RO prior to performing any work under a hazardous energy control procedure and placed on the Employee Authorization List (EAL).

Authorized Non-Reclamation Personnel: Non-Reclamation personnel who are trained and authorized under the F-HECP to perform specific tasks as described in the terms of a formal agreement not including procurement or construction contracts (Federal Acquisition Regulations). Examples of formal agreements include, but are not limited to, memoranda of understanding, memoranda of agreement, etc. These personnel will be placed on the facility non-Reclamation EAL.

Authorized Reclamation Employee: For role related responsibilities in the SWP process, the Authorized Reclamation Employee is the facility employee who is authorized to determine the appropriate hazardous energy control procedures required for the scope of work requested by the Contractor's Workplace Representative. The employee will have designation in the EAL to the Job Supervisor level as a minimum.

Capable of being locked out: An energy isolating device is capable of being locked out if it has a locking mechanism built into it or if it has a hasp or other means of attachment to which, or through which, a lock can be affixed that will prevent its position from being changed. Other energy isolating devices are capable of being locked out if changes in their position can be prevented without the need to dismantle, rebuild, or replace them or to permanently alter their energy control capability. Devices that accept bolted blank flanges and bolted slip blinds are considered to be capable of being locked out.

Clearance: A statement with signed documentation from the Operations Supervisor to the Job Supervisor declaring that the equipment (or system) to be worked on has been isolated from each source of hazardous energy.

Contractor: As used in special work permits, will include construction and/or maintenance personnel of a non-Reclamation organization where a contractual instrument under Federal Acquisition Regulations exists, or a service is being provided within the established credit card regulations.

Contractor's Workplace Representative: As used in special work permits, the Contractor's Workplace Representative is the onsite representative for the Contractor. The Contractor's Workplace Representative must be trained on Reclamation's F-HECP and authorized by the RO. This will allow the Contractor's Workplace Representative to place their lock for the hazardous energy control procedure.

De-energized: in a zero-energy state.

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

DOI Talent: The Web based application mandated by the Department of the Interior for tracking all training records.

Emergency: A situation in which:

- 1) Facilities are in a condition as to be a hazard to:
 - a. The public;
 - b. Reclamation personnel; or
 - c. Reclamation power or water system equipment.
- 2) There is a power outage to customers that could be hazardous to life or property.

Employee Authorization List (EAL): A current list identifying each Authorized Employee at a facility and HECP responsibilities.

Energized:

- 1) Electrical – Electrically connected to a source of voltage, or a source of voltage.
- 2) All other forms of energy – Connected to an energy supply 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.

Facility Hazardous Energy Control Program (F-HECP): A program for a facility or a group of facilities that implements the guidance compiled in a single document consisting of a copy of FIST 1-1 along with specific facility requirements.

Group Lockout: An energy control procedure that provides a group of authorized employees with the same level of protection as a personal lockout device. Reclamation does not utilize group lockout. Clearances are the only complex group lockout utilized in the HECP.

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 (e.g., high or low temperature) energy that could cause injury to employees. Danger 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 chemicals (e.g., 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 (HEC) Procedures: Procedures for the control of all hazardous energy, which are to be used only one time. Each procedure must be approved before being used. Previously prepared procedures may be used for reference only. 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.

Hazardous Energy Control Program (HECP): Reclamation's mandatory written program establishing consistent and coordinated procedures and operating criteria for the safe and reliable operation and maintenance of Federal facilities for which Reclamation is responsible. This Reclamation program is contained in FIST 1-1.

Hazardous Energy Work Permit (HEWP): The overall purpose of an HEWP is to ensure that the hazards of working on or near exposed live parts receive adequate consideration. It also informs both managers and workers who work on energized equipment that work is going to be performed in the facility.

Hot Line Order: A written statement with supporting documentation from an 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. A hot line order may also be referred to as a terminal hold by non-Reclamation offices and personnel.

Incidental Employee: Any person who may be in an area where hazardous energy control procedures may be used, but they are not operating or interacting with machines under hazardous energy controls; Must receive instruction regarding the hazardous energy control procedures and the prohibition against removing a lockout or tagout device, and prohibitions against attempting to restart, reenergize, or operate the machinery. Must be aware that altering, removing or tampering with Hazardous Energy Control devices could kill somebody. Incidental Employees do not perform any work that requires Hazardous Energy Controls to be put into place and are not issued personal locks.

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 or Hot Line Order: A written 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 or hot line order on another system, in accordance with the appropriate operating agreements.

Note: If other terms are used by non-Reclamation entities, those terms must be noted here in the F-HECP.

Isolation: An activity that physically prevents the transmission or release of energy.

Job Briefing: A discussion conducted by the Job Supervisor with the Authorized 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 JHA.

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 supervisor, consulting with a safety or health professional if needed, assesses the workplace and work activities and determine the mitigation techniques.

Note: As work is performed under a JHA, reassess the JHA to ensure that hazards have been addressed and adequate hazards controls have been implemented. Job site monitoring and observation of work activities must be a basis for assessment and revision. Where controls are determined to be insufficient, halt work until adequate controls can be developed.

Job Supervisor: An employee who has been authorized by the RO to request, accept, and release clearances and hot line orders, and to initiate and implement HEWPs. Job Supervisors must have the knowledge and skills necessary for the safe application, use, and removal of hazardous energy control procedures. This term designates an HECP function. A Job Supervisor is not associated with the management or supervision of personnel. Note: Supervisor (as used in this context) does not have the same legal meaning as contained in the Federal Service Labor Management Relations Statute (FSLMRS). This can include wage board and/or bargaining board employees.

Limits (of an HECP procedure): A safe work area established by the hazardous energy controls to allow each Job Supervisor 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 limits of the clearance.

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 isolation device in the safe position.

Operational Configuration Management: The process of managing deviations from normal operating conditions and the process for tracking and restoring to those normal operating conditions. It includes any procedure that changes the status of equipment (or system).

Operations Log: Documented records created, maintained, and used by operations personnel to describe and record operating information and events that aid in evaluating present and past unit or plant status. An operations log may be a bound paper book or in electronic format. Also known as Station Log.

Operations Supervisor: An employee who has been authorized by the RO to prepare and direct switching, and to issue, receive, and release clearances, hot line orders, interconnected system clearances, and interconnected system hot line orders. This term designates a HECP function. Note: Supervisor (as used in this context) does not have the same legal meaning as contained in the Federal Service Labor Management Relations Statute (FSLMRS). This can include wage board and/or bargaining board employees.

Reclamation Non-facility Personnel: Any Reclamation personnel who are not permanent employees at the facility. Examples are TSC employees, dive teams, rope teams, regional office personnel, etc.

Reclamation Representative: A person who is designated at the facility to perform HECP functions to support contractor work and sign SWPs. The person must be capable of determining the correct HEC procedures to be used and followed for the work to be performed.

Responsible Official (RO): The manager who is responsible for the administration of the F-HECP.

Special Condition: An unusual or temporary condition pertaining to equipment (or system).

Special Work Permit (SWP): A statement with signed documentation of the coordination between Reclamation and a contractor to authorize work when an HEC Procedure is required.

Station Log: Documented records created, maintained, and used by operations personnel to describe and record operating information and events that aid in evaluating present and past unit or plant status. A station log may be a bound paper book or in electronic format. Also known as Operations Log.

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.

Switching (for operational configuration management): Switching performed to manage changes of the status of equipment (or system).

Switchman: An employee who has been authorized by the RO to perform switching (for operational configuration management).

Tagout: The placement of an HECP tag on an energy isolation device in accordance with an established procedure, indicating that the energy isolation device must not be operated.

Three Part Communications: An exchange of information that is clear, concise, and 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 Passages and Waterways: Spillways, canals, scroll cases, draft tubes, tunnels, penstocks, gate chambers and designated areas below gates, where the inadvertent opening of the isolation device could release hazardous energy and could engulf or injure personnel.

Appendix B – Facility Hazardous Energy Control Program Example

Personal Lockout (Tagout)

10.1

Personal lockout (tagout) must NOT be used when the protection requires a clearance. An employee must NOT work under the protection of another employee's lock (tag).

10.2 General

NOTE: Personal Tags are not authorized at Plant 1

- 1) Equipment that can be removed from service and restored to service without a clearance must have an approved JHA that includes, or has attached, a procedure identifying where the personal lock(s) or tag(s) are to be placed.
- 2) Placement and removal of any personal lock(s) or tag(s) must be:
 - a) Coordinated with operations;
 - b) Approved by an Authorized Employee;
 - c) Documented; and
 - d) Recorded.
- 3) **Only one** Personal Lock (Tag) may be used by an Authorized Employee on the energy isolation devices for the equipment (or system).
- 4) When a personal tag is used, the following requirements apply:
 - a) The personal tag must be attached directly to the energy isolation device whenever possible;
 - b) Where a personal tag cannot be attached directly to the energy isolation device, the personal tag must be located as close as safely possible to the energy isolation device, in a position that will be immediately obvious to anyone attempting to operate the energy isolation device.

Appendix C – Forms and Tags

POM-210 (8-11) Bureau of Reclamation		Hazardous Energy Control Program		RECLAMATION <i>Managing Water in the West</i>	
Documentation of Review or Revision					
Date of Review or Revision: _____					
Certifying Officials					
Operations Manager:		_____	Date:		_____
Safety Manager:		_____	Date:		_____
Approving Official					
Responsible Official:		_____		Date: _____	

Figure 1: Hazardous Energy Control Program (POM-210)

POM-211 (8-11)
Bureau of Reclamation

F-HECP Annual Review
20__

RECLAMATION
Managing Water in the West

Facility	
1. Employee Program Deficiencies	a. Description of Deficiency b. Corrective Action Plan
2. Training	a. Annual Training Complete b. Employee DOI Learn Records up-to-date c. Suggested improvements – training presentation/examination/etc.
3. Employee Authorization List	a. List verified up-to-date
4. Facility HECP Review	a. Document reviewed and signed/dated b. Assessment of written program/procedures, specific equipment, energy isolation devices, alternative methods, communications
5. Document Review	a. Clearances b. Hot Line Orders c. Special Conditions d. Operation's Locks e. Special Work Permits f. Job Hazard Analysis g. Job Plans
Completed By	Date
NOTE: A copy of this document will be provided to the Power Resources Manager	

Figure 2: F-HECP Annual Review (POM-211)

POM-212 (08-2019)
 Bureau of Reclamation



RECLAMATION
Managing Water in the West

CLEARANCE/HOT LINE ORDER (HLO) REQUEST

<input type="checkbox"/> Clearance Request	<input type="checkbox"/> Hot Line Order Request		
Requested By: <input style="width: 100%;" type="text"/>			
Date: <input style="width: 20%;" type="text"/> Time: <input style="width: 20%;" type="text"/>			
Equipment: <input style="width: 100%;" type="text"/>			
Date/Time Clearance/HLO to be ready: Date: <input style="width: 20%;" type="text"/> Time: <input style="width: 20%;" type="text"/>			
Duration of Clearance/HLO: <input style="width: 100%;" type="text"/>			
Estimated time to return to service in an emergency: <input style="width: 100%;" type="text"/>			
Scope of Work to be performed: <div style="background-color: #e0e0ff; height: 40px; width: 100%;"></div>			
Limits of the Clearance / Hotline Order: <div style="background-color: #e0e0ff; height: 40px; width: 100%;"></div>			
Special Instructions: (Attach separate sheets/References if required) <div style="background-color: #e0e0ff; height: 40px; width: 100%;"></div>			
If Outside Coordination is required: <input type="checkbox"/> N/A			
<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>			
Interconnected System Scheduler			
<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>
Bureau Representative	Bureau Representative Signature	Date	Time
Clearance Request Approved and Scheduled:			
Approved: <div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>	<div style="background-color: #e0e0ff; height: 20px; width: 100%;"></div>
(Operations Dept./Facility Representative)	Date	Time	

Figure 3: Clearance Request (POM-212)

FIST Volume 1-1
Hazardous Energy Control Program

POM-213 (08-2018)
Bureau of Reclamation



HAZARDOUS ENERGY WORK PERMIT

RECLAMATION
Managing Water in the West

Hazardous Energy Work Permit Number: _____		
Work Order/Job Plan Number: _____		Circuit/equipment: _____
Location: _____		
Description of work: _____		
Attached Documents <input type="checkbox"/> Job Plan <input type="checkbox"/> Job Hazard Analysis		
Justification of why the equipment must be worked on with Hazardous Energy present and why the work cannot be deferred until next outage _____ _____		
Hazard	Control Measure	
Shock	_____	
Arc Flash	_____	
Mechanical	_____	
Other	_____	
To Be Completed by the Qualified Person(s) DOING the work:		
Do you agree the work can be done safely?		
Qualified Worker	_____	_____
	Print Name	Signature
		Date/Time
Qualified Worker	_____	_____
	Print Name	Signature
		Date/Time
Approval(s) to perform the work Hazardous Energy Present:		
Foreman/Supervisor	_____	_____
	Print Name	Signature
		Date/Time
Responsible Official	_____	_____
	Authorizing Official	Signature
		Date/Time
Expiration Date	_____	

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Figure 4: Hazardous Energy Work Permit (POM-213)

POM-214 (11-16)
Bureau of Reclamation

Release Under Abnormal Conditions

RECLAMATION
Managing Water in the West

<input type="checkbox"/>	Personal Lockout/Tagout	Name of Authorized Employee	
<input type="checkbox"/>	Clearance	Name of Authorized Employee	
<p>This form must be completed when a lock/tag or Clearance is removed by someone other than the Authorized Employee who placed it.</p>			
Initial each step:			
<p>1. _____ The Authorized Employee's Supervisor shall verify that the individual who placed the Person Lock or Tag (holds the Clearance) is not at the facility.</p> <p>2. _____ The Authorized Employee's Supervisor shall make reasonable efforts to inform the individual that their Personal Lock or Tag (Clearance) will be removed (released).</p> <p>3. _____ The Authorized Employee's Supervisor shall take responsibility for the Personal Lock or Tag (Clearance).</p> <p>4. _____ If applicable, a new Job Supervisor shall request and accept an Identical Clearance prior to release of the original Clearance.</p> <p>5. _____ The Authorized Employee's Supervisor shall authorize the removal (release) of the Personal Lock or Tag (Clearance).</p> <p>6. _____ The Authorized Employee's Supervisor shall direct the removal of the Personal Lock or Tag.</p> <p>7. _____ The Authorized Employee's Supervisor shall inform the individual upon their return to the facility and prior to commencing work that their Personal Lock or Tag (Clearance) has been removed (released).</p>			
Signature:			
Authorized Employee's Supervisor		_____	Date _____
Authorized Employee or Clearance Holder		_____	Date _____
New Clearance Holder (if applicable)		_____	Date _____
Operation's Supervisor (if applicable)		_____	Date _____
<p>Note: Attach this document to the Clearance (if applicable).</p>			
Comments:			

Figure 5: Release Under Abnormal Conditions (POM-214)

FIST Volume 1-1
Hazardous Energy Control Program

POM-215 (08-2018)
 Bureau of Reclamation



SPECIAL WORK PERMIT

RECLAMATION
Managing Water in the West

Contractor Name: _____		
SWP# _____	CL# _____	HLO# _____
Purpose and Scope of Work to be Performed: (Attach Additional Sheets if Needed)		
Will this SWP require personal protective grounds? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<p>The contractor is authorized to proceed with the work as designated above. Signature indicates that the undersigned have discussed the work to be performed, reviewed the details of the Clearance or HLO for adequacy, and verified understanding of the placement of shorts, jumpers, and personal protective grounds and conditions of the working area. ALL SIGNATURES ARE REQUIRED.</p>		
Authorized Reclamation Employee	_____	_____
	(Print Name)	(Signature)
Contractor's Workplace Representative	_____	_____
	(Print Name)	(Signature)
Reclamation Representative	_____	_____
	(Print Name)	(Signature)
This Special Work Permit issued at the worksite: Date _____ Time _____		
Release of Special Work Permit		
<p>Signature certified that the contractors work under the clearance is complete, 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 this Special Work Permit. ALL SIGNATURES ARE REQUIRED.</p>		
Contractor's Workplace Representative	_____	_____
	(Print Name)	(Signature)
Reclamation Representative	_____	_____
	(Print Name)	(Signature)
Authorized Reclamation Employee	_____	_____
	(Print Name)	(Signature)
This Special Work Permit issued at the worksite: Date _____ Time _____		

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Figure 6: Special Work Permit (POM-215)

POM-216 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

SWITCHING PROGRAM FORM

Facility:	<input type="checkbox"/> Clearance Number: _____ <input type="checkbox"/> Hot Line Order <input type="checkbox"/> Switching (for Configuration Management)
Equipment:	Work to be performed:
Comments/Instructions	

Placement Procedure Prepared By:	Placement Procedure Checked By:
Removal Procedure Prepared By:	Removal Procedure Checked By:

Clearance #	Issued To	Issued By	Date/Time	Released By	Released To	Date/Time

Personnel Ground I.D. #	Placed by/Time & Date	Removed By/ Time & Date	Initial Location

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Hazardous Energy Control Program

POM-216 (8-11)
 Bureau of Reclamation

RECLAMATION
Managing Water in the West

SWITCHING PROGRAM FORM

Facility:	<input type="checkbox"/> Clearance Number: _____ <input type="checkbox"/> Hot Line Order <input type="checkbox"/> Switching (for Configuration Management)
Equipment:	Work to be performed:
Comments/Instructions	

STEP	SWITCHING PROCEDURE FOR PLACEMENT	LOCK/ TAG#	TIME	INITIAL
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

POM-216 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

SWITCHING PROGRAM FORM

Facility:	<input type="checkbox"/> Clearance Number: _____ <input type="checkbox"/> Hot Line Order <input type="checkbox"/> Switching (for Configuration Management)
Equipment:	Work to be performed:
Comments/Instructions	

STEP	SWITCHING PROCEDURE FOR REMOVAL	LOCK/ TAG#	TIME	INITIAL
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

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Figure 7: Switching Program Form (POM-216)

POM-217 (08-2018)
Bureau of Reclamation



HAZARDOUS ENERGY WORK PERMIT RECORD

RECLAMATION
Managing Water in the West

[illegible]

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Figure 8: Hazardous Energy Work Permit Record (POM-217)

[illegible]

(FIST 002) 01/31/2013
NEW RELEASE
(Minor revisions approved 08/08/2018, 08/15/2019)

RECLAMATION

[illegible]

(FIST 002) 01/31/2013
NEW RELEASE
(Minor revisions approved 08/08/2018, 08/15/2019)

POM-222 (8-11)
Bureau of Reclamation

Job Supervisor Proficiency Checklist

RECLAMATION
Managing Water in the West

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	<input type="checkbox"/>	<input type="checkbox"/>
2. Explain the purpose of Configuration Management	<input type="checkbox"/>	<input type="checkbox"/>
3. Explain the principles of the Release Under Abnormal Conditions process	<input type="checkbox"/>	<input type="checkbox"/>
4. Explain the Personal Lockout/Tagout process	<input type="checkbox"/>	<input type="checkbox"/>
5. Clearance Process		
a) Perform the following:		
1) Complete an Outage Request and submit to Operations	<input type="checkbox"/>	<input type="checkbox"/>
2) Complete the process of accepting a Clearance including an explanation of Working under a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
3) Complete the process of releasing a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
b) Explain Identical Clearances	<input type="checkbox"/>	<input type="checkbox"/>
c) Explain how to change the limits of a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
6. Explain the Hot Line Order process	<input type="checkbox"/>	<input type="checkbox"/>
7. Explain the Hazardous Energy Work Permit process and complete a Hazardous Energy Work Permit	<input type="checkbox"/>	<input type="checkbox"/>
8. Explain the Special Work Permit process and complete a Special Work Permit	<input type="checkbox"/>	<input type="checkbox"/>
Comments		
<div style="display: flex; justify-content: space-between;"> <div>Overall Grade</div> <div> <input type="checkbox"/> Passed <input type="checkbox"/> Failed </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Plant Supervisor or Examiner/Title _____</div> <div>Date _____</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Print Name _____</div> <div>Signature _____</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Individual/Title _____</div> <div>Date _____</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Print Name _____</div> <div>Signature _____</div> </div>		

Figure 13: Job Supervisory Proficiency Checklist (POM-222)

POM-224 (8-11)
Bureau of Reclamation

Operations Supervisor Proficiency Checklist

RECLAMATION
Managing Water in the West

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	<input type="checkbox"/>	<input type="checkbox"/>
2. Explain the purpose of Configuration Management	<input type="checkbox"/>	<input type="checkbox"/>
3. Explain the principles of the Release Under Abnormal Conditions process	<input type="checkbox"/>	<input type="checkbox"/>
4. Explain the Personal Lockout/Tagout process	<input type="checkbox"/>	<input type="checkbox"/>
5. Clearance Process		
a) Explain the Job Supervisor's responsibilities concerning an Outage Request, accepting a Clearance, working under a Clearance, and releasing a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
b) Explain the Workman's responsibilities while working under a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
c) Utilize an Outage Request to write a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
d) Direct the placement of a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
1) Place a Clearance utilizing the Six Basic Steps of Switching	<input type="checkbox"/>	<input type="checkbox"/>
e) Issue a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
f) Release and direct the removal of a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
1) Remove a Clearance utilizing the Six Basic Steps of Switching	<input type="checkbox"/>	<input type="checkbox"/>
g) Explain Identical Clearances	<input type="checkbox"/>	<input type="checkbox"/>
h) Explain how to change the limits of a Clearance	<input type="checkbox"/>	<input type="checkbox"/>
i) Explain Clearances at Remote Sites	<input type="checkbox"/>	<input type="checkbox"/>
6. Explain the Hot Line Order process	<input type="checkbox"/>	<input type="checkbox"/>
7. Explain the Hazardous Energy Work Permit process and complete a Hazardous Energy Work Permit	<input type="checkbox"/>	<input type="checkbox"/>
8. Explain the Special Work Permit process and complete a Special Work Permit	<input type="checkbox"/>	<input type="checkbox"/>
9. Explain the Interconnected System Clearances and Hot Line Order processes and perform a "mock" procedure	<input type="checkbox"/>	<input type="checkbox"/>
Comments		
<div style="display: flex; justify-content: space-between;"> <div>Overall Grade <input type="checkbox"/> Passed <input type="checkbox"/> Failed</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Plant Supervisor or Examiner/Title _____</div> <div>Date _____</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ Print Name</div> <div>_____ Signature</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>Individual/Title _____</div> <div>Date _____</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ Print Name</div> <div>_____ Signature</div> </div>		

Figure 15: Operations Supervisor Proficiency Checklist (POM-224)

FIST Volume 1-1
Hazardous Energy Control Program

POM-226(8-11)
Bureau of Reclamation

BUREAU OF RECLAMATION
Power Resources Manager
Attention: FIST Coordinator
D86-61600
Denver Federal Center
Bldg. 67, 14th Floor
P.O. Box 25007 (86-61600)
Denver, CO 80225-0007

RECLAMATION
Managing Water in the West

FIST Revision Request Form

Submitted By:	Date:
Facility:	FIST/Section:
FIST Title (if requesting new):	

Summary of Change (attach additional sheets or marked up pages of current FIST as needed):

Basis for Revision/New FIST:

Final Disposition:	
--------------------	--

Power Resources Office Contact:	
---------------------------------	--

Figure 16: FIST Revision Request Form (POM-226)

⚠ DANGER
HANDS OFF
DO NOT OPERATE

PLACE
PHOTO
HERE

NAME

DEPARTMENT

QUESTIONS?

PHONE

Start Here
Align side of padlock between
the horizontal shaded red lines

Enter the required information before applying decal. Remove lower portion of backing sheet from decal, register decal between the lines, and start applying to side of padlock. Then remove the top portion of the backing sheet and continue to wrap tightly around padlock. The ends will overlap. Remove liner to expose photo adhesive and place a photo. Apply the laminate over the decal.

Figure 17: Personal Lock Label (POM-139)

Lock Set #: <hr/>
⚠ DANGER DO NOT OPERATE PEOPLE WORKING CLEARANCE
Lock #: <hr/>
⚠ DANGER DO NOT OPERATE PEOPLE WORKING CLEARANCE
Start Here Align side of padlock between the horizontal shaded red lines
Enter the required information before applying decal. Remove lower portion of backing sheet from decal, register decal between the lines, and start applying to side of padlock. Then remove the top portion of the backing sheet and continue to wrap tightly around padlock. The ends will overlap. Apply the laminate over the decal.

Figure 18: Clearance Lock Label (POM-140)

Note: Tags are not to scale.



Figure 19: Clearance Tag (POM-137)

Note: Tags are not to scale.



Figure 20: Hot Line Tag (POM-135)

Note: Tags are not to scale.



Figure 21: Personal Tag (POM-166)

Note: Tags are not to scale.

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE

SPECIAL CONDITION

Switching Program Order Number: _____

Equipment: _____

Placed By: _____

Date: _____

Time: _____

POM-138 (7-2010)

Do Not Remove This Tag

FRONT

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

NOTICE

SPECIAL CONDITION

Remarks: _____

POM-138 (7-2010)

Do Not Remove This Tag

BACK

Figure 22: Special Condition Tag (POM-138)

FIST Volume 1-1 Hazardous Energy Control Program

Job Plans Details Report // 30208 - YFO - HECP REVIEW, INSPECTION & UPDATES - ROUTINE (O&M)

Status: Interruptible? No
 Duration: 20:00
 Planned By: Lead Craft:
 Crew:
 Lead Person:

Job Plan Tasks			
Sequence	Task ID	Description	Meter Name
10	Employee Program Deficiencies		00:00
		List all deficiencies and the associated corrective action plans.	
20	Training Records		00:00
		1. A copy of the training records should be used to verify that all authorized personnel have been trained during the applicable calendar year.	
		2. Verify that the DOI designated learning database (currently DOI Learn) has been updated.	
		3. List any suggested improvements to the program such as the presentation, examination, etc.	
30	Employee Authorization List		00:00
		Verify list is up-to-date and sent by letter to appropriate agencies (ie: BPA, etc)	
40	F-HECP		00:00
		1. Verify that the document has been reviewed and signed/dated for the applicable calendar year and PM in place.	
		2. Document an assessment of the written program/procedures, specific equipment, energy isolation devices, alternative methods, and communication.	
50	Clearances, Hot Line Orders (HLO), Switching Program Forms (SPF) associated with Configuration Management (Obtain the following documents and make copies)		00:00
		1. Verify assigned number against the log sheet and/or Station Logbook	
		2. Confirm the following:	
		a) All sections of the SPF are complete.	

FIST Volume 1-1
Hazardous Energy Control Program

Job Plans Details Report // 30208 - YFO - HECP REVIEW, INSPECTION & UPDATES - ROUTINE (0&M)

Job Plan Tasks			
Sequence	Task ID	Description	Meter Name
		b) Document has been prepared by a qualified Operations Supervisor.	
		c) Document has been checked by a second qualified Operations Supervisor.	
		d) Placement and Removal steps complete with Switchman initials and times.	
		e) If associated with a SWP, the # should be on the SWP and attached to the SPF.	
		f) Clearance Request completed properly and attached to the SPF.	
Sequence	Task ID	Description	Meter Name
	60	Special Condition Tags	00:00
		1. Verify tags are being tracked.	
		2. Verify tags have been reviewed during the applicable calendar year.	
Sequence	Task ID	Description	Meter Name
	70	Operations Locks	00:00
		1. Verify locks are being tracked.	
		2. Verify locks are being used appropriately.	
		3. Verify locks are described in the F-HECP.	
Sequence	Task ID	Description	Meter Name
	80	Job Hazard Analysis (JHA) associated with Personal Lockout/Tagout	00:00
		Personal Locks/Tags utilized to mitigate hazards are identified on the JHA.	
Sequence	Task ID	Description	Meter Name
	90	Job Plans and Work Orders (if applicable)	00:00
		1. Ensure Job plans and work orders associated with work requiring Personal Lockout/Tagout are effective.	
Sequence	Task ID	Description	Meter Name
	100	Hazardous Energy Work Permits	00:00
		1. Verify HEWP are being tracked.	
		2. Ensure all sections of the HEWP are complete.	
Sequence	Task ID	Description	Meter Name
	110	Conduct interviews to evaluate effectiveness of program, training, etc. Interview questions and personnel interviewed should be noted in the packet.	00:00
Sequence	Task ID	Description	Meter Name
	120	Send copy of the completed Annual Review form (POM-2-11) to the regional power manager and the Power Resources Office.	00:00
Sequence	Task ID	Description	Meter Name
	130	File entire packet of materials	00:00

Job Plans Details Report // 30208 - YFO - HECF REVIEW, INSPECTION & UPDATES - ROUTINE (O&M)									
Planned Labor									
Task ID	Craft	Skill Level	Vendor	Contract	Labor	Qty	Hours	Rate	Line Cost
CCA-ELECT						1.00	20.00	89.03	1780.60
Total Planned Labor Cost:						1780.60			
Grand Total for all Costs:						1780.60			

Figure 23: Example Job Plan Details Report