RECLAMATION

Managing Water in the West

Facilities Instructions, Standards, and Techniques
Volume 1-1

Hazardous Energy Control Program

U.S. Department of the Interior
Bureau of Reclamation
Denver, Colorado

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The Bureau of Reclamation (Reclamation) 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 operational control of a facility's configuration and for the control of hazardous energy. The later is intended to satisfy the requirements of OSHA 29 CFR 1910.147 and 29 CFR 1910.269.

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Volume 1-1

Hazardous Energy Control Program

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Acronyms and Abbreviations

AF	Arc Flash
AFH	Arc Flash Hazard
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
DOI Learn	Department of Interior (Learn)
FAR	Federal Acquisition Regulations
F-HECP	Facility(s) Hazardous Energy Control Program
FIST	Facilities Instructions, Standards, and Techniques
HEC	Hazardous Energy Control
JHA	Job Hazard Analysis
NFPA	National Fire Protection Association
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Clothing and Equipment
RO	Responsible Official
Reclamation	Bureau of Reclamation
RSHS	Reclamation Safety and Health Standards
SCADA	Supervisory Control and Data Acquisition
SOPs	Standing Operating Procedures

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1. Introduction

1.1 Purpose

The purpose of the Facilities Instructions, Standards, and Techniques (FIST) Volume 1-1 is to establish consistent procedures for the control of Hazardous Energy and to maintain operational control of a facility's configuration. This includes activities affecting operation, maintenance, and construction of those Federal facilities for which the Bureau of Reclamation (Reclamation) is responsible.

The primary objective of this document is to establish a program to provide for the physical safety of employees and the public.

Secondary objectives of the program are:

(1) Integrity and reliability of the Reclamation power and water system.

(2) Protection of Equipment.

(3) Service to the customer.

1.2 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 Switching Program Form with you while Switching.**
- **(b) Touch or point to the device identification nameplate to verify correct device.**
- **(c) Recheck the switching program form for correct device and sequence.**
- **(d) Verify anticipated device position.**
- **(e) Perform requested action on the device.**
- **(f) Verify desired device position.**

(3) Clearance Tags, Hot Line Tags, or Personal Tags are to be considered the same as Locks.

(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) Clearance Tags and Personal Tags must not be used on Energy Isolation Devices capable of being locked.

(8) Equipment must be considered Energized until appropriate tests have been performed to verify the Equipment is Deenergized.

1.3 Scope

This document establishes procedures and operating criteria that must be complied with throughout Reclamation. This document prescribes procedures for the safety of personnel who work on or near any Equipment (or system) that produces, uses, or stores Hazardous Energy. It establishes minimum standards and performance requirements for the control of Hazardous Energy at all Reclamation operated or maintained facilities.

1.4 Facility Hazardous Energy Control Program and Procedures

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

(1) The F-HECP must:

(a) At a minimum, be as restrictive as the FIST Volume 1-1 requirements,

(b) Incorporate specific Hazardous Energy Control Procedures for the facility(s),

(c) Identify the Responsible Official (RO),

(d) Be reviewed and updated at least annually,

(e) Be annually approved and signed by the Responsible Official,

(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 Employee Authorization List must:

(a) Be maintained at each facility.

(b) Identify each employee and the HEC Procedures for which they are authorized to perform:

(i) Authorized Employees,

(ii) Switchmen,

(iii) Job Supervisors, and

(iv) Operations supervisors.

(c) Be reviewed and signed by the Responsible Official at least annually.

(3) A current non-Reclamation Employee Authorization List (see section 17) must be maintained as required in the F-HECP.

(4) The Employee Authorization List 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.

1.5 Reclamation Standard Practices

FIST procedures, practices, and schedules that appear in black bold and bracketed text are considered Reclamation standard practice. FIST procedures, practices, and schedules that appear in red bold and bracketed text are related to compliance issues, such as safety (Occupational Safety and Health Administration [OSHA]) or reliability (North American Electric Reliability Corporation [NERC]) and cannot be varied from. **[The entirety of this document, unless otherwise noted, is to be considered as red bold and bracketed.]**

1.6 Effect of Section Headings

Section headings or titles appearing in this document are inserted for convenience only and must not be construed as interpretations of text or a standard practice.

1.7 Job Hazard Analysis

(1) A Job Hazard Analysis (JHA) must be prepared to identify all hazards specific to the work to be performed. Refer to Reclamation Safety and Health Standards (RSHS), section 4. Analysis must include electrical shock and Arc Flash Hazard considerations. See FIST Volume 5-14 for more information concerning Arc Flash Hazards.

(2) The JHA must identify when a Hazardous Energy Control Procedure is necessary.

(3) A typical JHA preparation form is attached for reference in Appendix D – Job Hazard Analysis Example.

1.8 Interpretations

(1) The stated interpretations for the following words must be applied throughout this document:

(a) "May" – Permissive choice or discretionary action.

(b) "Must" – Mandatory or obligation.

(c) "Must Not" – Prohibition.

(d) "Should" – Advisory or recommendation.

(e) "Will" – Mandatory, but allowing the employee or party some discretion as to when, where, or how.

(2) As used in this document, the pronouns "he," "his," and "himself" refer to a specific individual or position that might be "she," "her," or "herself" in a given circumstance. "Switchman" is also used in this context.

1.9 Emergencies

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

1.10 Document Retention

Upon completion of the work, Hazardous Energy Control Procedures and supporting documentation, including JHAs, Job Plans, etc., must be kept for a minimum of 6 years. If retention of a document is needed for another program, such as Mandatory Reliability Compliance or Unexpected Event Reporting, any longer retention requirements will prevail for those documents. These records can be retained in any format (e.g., electronic or hard copy) that can be identified and disposed of when the retention period is met.

1.11 Air, Water, Hydraulic Systems

There are not any generally accepted industry pressure levels for Air, Water, and Hydraulic systems similar to the 50- and 600-volt thresholds for electrical systems. Each facility in their F-HECP must define the threshold where the energy level in an Air, Water, or Hydraulic system becomes subject to:

(1) Personal Lockout and Tagout

(2) Clearance

2. Responsibility and Authority

2.1 Responsible Official

The Responsible Official 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

Employee 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 will be 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 a HEC Procedure until:

(1) Trained,

(2) Tested,

(3) Authorized by the Responsible Official, 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 Hazardous Energy Control (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, Power Resources Office, is responsible annually for the following:

(1) Provide technical support.

(2) Provide 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(s).

(3) Collect data from F-HECP reviews (see section 4), Review of Power Operations and Maintenance[1] recommendations, and Unexpected Event Reporting[2] documentation including:

   (a) Effectiveness of training program (examination, presentation, trainer, etc.)

   (b) HECP-related recommendations

   (c) HECP-related incident investigation findings

(4) Review Reclamation FIST Volume 1-1.

(5) Provide feedback and report to regional directors.

(6) Review and take appropriate action on suggested revisions, comments, and concerns.

[1] See Power Review of Operations and Maintenance Program.

[2] See FIST Volume 6-3, Unexpected Event Reporting.

3. Training Program

3.1 Purpose

Ensure that all Reclamation employees involved with the F-HECP have an understanding that is appropriate for the level of Hazardous Energy exposure they may encounter.

3.2 Requirements

The Responsible Official must ensure that Facility specific information is developed and included with the standardized training materials.

(1) Authorized Employees

(a) Prior to being authorized to work under a 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 Power Resources Office and additional F-HECP related questions.

(c) Employees passing the examination will be referred to the Responsible Official, with recommendations for placement on the Employee Authorization List.

(d) Employees may be subject to examination at any time on F-HECP.

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

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(2) Incidental Employees

(a) A minimum of 1 hour of F-HECP awareness training must be provided.

3.3 Retraining

Additional training must be provided annually (see section 3.2, 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) If there is reason to suspect deficiencies or inadequacies in the employee's knowledge of the F-HECP or use of energy control procedure(s).

(3) If an employee does not complete the annual training.

(4) If an employee fails the examination.

3.4 Documentation.

The Responsible Official must be responsible for documenting all training (including any retraining) in DOI Learn. DOI Learn is the U.S. Department of the Interior standard.

4. Facility Hazardous Energy Control Program Review

4.1 Requirements

The Responsible Official must ensure that the F-HECP review is conducted at least annually, to ensure:

(1) Proper implementation,

(2) Proper documentation,

(3) Employees are familiar with their responsibilities,

(4) Employees maintain proficiency,

(5) Training requirements are met, and

(6) Corrective action plans are prepared and completed to address any identified deficiencies.

These reviews must include:

(1) A random sampling of the HEC Procedures (including JHAs, Job Plans, etc.),

(2) Program deficiencies, such as:

  (a) Incidents,

  (b) HECP errors,

  (c) Status of previously noted incidents, and

  (d) Other

(3) Employee interviews,

(4) Training program documentation,

(5) Employee Authorization List is current,

(6) F-HECP review and revision has been completed,

(7) Legibility of the tags,[3] and

(8) Evaluation of progress toward having lockable Energy Isolation Devices so that use of Personal and Clearance Tags can be eliminated.

The review will be documented on the "F-HECP – Annual Review Form" (PO&M-211), and a copy sent to the Manager, Power Resources Office.

4.2 Responsibility

The Responsible Official must designate an employee(s) to conduct the review of the F-HECP. The designated employee(s) must not have been involved in 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

(4) What changes, if any, are needed.

[3] Has exposure to weather or wet and damp locations caused the tag to deteriorate or the message on the tag(s) to become illegible? Have tags deteriorated if used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

5. 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. The Locks must be standardized within the facility in at least one of the following criteria:

(a) Color,

(b) Shape

(c) Size, or

(d) Specific markings.

(2) 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, and

(v) Be used on Energy Isolation Devices that are capable of being locked out.

(b) Personal Locks should also be labeled[4] with:

(i) DANGER

(ii) DO NOT REMOVE

(iii) HANDS OFF

(iv) DO NOT OPERATE

[4] Labels for Personal Locks must be added to the Locks as Locks are replaced or relabeled.

(3) Clearance Locks

(a) Clearance Locks must:

(i) Be used by authorized switchmen,

(ii) Used for Clearance purposes only,

(iii) Establish the limits of the Clearance,

(iv) Be used on all Energy Isolation Devices that are capable of being locked out, and

(v) Indicate the Clearance lockset and lock number

(vi) Have the key uniquely identified with its associated clearance lockset, and ensure that the label is easy to read.

(b) Clearance Locks should be labeled[5] with:

(i) DANGER

(ii) DO NOT OPERATE

(iii) PEOPLE WORKING

(iv) CLEARANCE

(4) Operations Locks

(a) Operations Locks must:

(i) Be used by Switchmen,

(ii) Be used for Operational Configuration Management, and

(iii) Be used and recorded as described in the F-HECP.

(iv) Operations Locks must 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;

[5] Labels for Clearance Locks must be added to the Locks as Locks are replaced or relabeled.

(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.

5.3 Multi Lock Device

A device that allows multiple locks to be placed on an Energy Isolation Device. This device should be used on all lockable Energy Isolation Devices.

5.4 Tags

(1) General

(a) Standardized

Tags must be standard Reclamation-wide. Tags are shown in appendix E. Tags are available from publishing services at 303-445-2066. Tags are only available in units of one box (50 Tags).

(i) Clearance

(A) Form number: POM-0137 (7-2010)

(b) Stock number: P7540000POM137R

(ii) Hot Line

(A) Form number: POM-0135 (7-2010)

(B) Stock number: P7540000POM135R

(iii) Personal

(A) Form number: POM-0166 (7-2010)

(B) Stock number: P7540000POM166R

(iv) Special Condition

(A) Form number: POM-0138 (7-2010)

(B) Stock number: P7540000POM138R

(b) Tag Attachment

Tags, including their means of attachment, will be substantial enough to prevent inadvertent or accidental removal. Tag attachment means must be of a nonreusable type, attachable by hand, self-locking, and nonreleasable with a minimum unlocking strength of no less than 50 pounds and must 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

The Clearance 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

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.

Personal Tags must:

(a) Be used by Authorized Employees,

(b) Be for personal protection only,

(c) Be used on Energy Isolation Devices that are incapable of being locked out, and

(d) Be completely filled out prior to placement.

(3) Clearance Tags

Clearance Tags must:

(a) Be used by Switchmen,

(b) Establish the limits of the Clearance, and

(c) Be used on Energy Isolation Devices that are incapable of being locked out.

(4) Special Condition Tags

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

(5) Hot Line Tags

These Tags are used in connection with Hot Line Orders to prevent reenergizing Equipment.

Hot Line Tags must:

(a) Be used by Switchmen;

(b) Be applied to the appropriate circuit breaker control switches.

5.5 Standard Forms

These forms are shown in appendix E. They are also available on the Reclamation intranet site.

(1) General

The following forms have been standardized and must be used in this program:

(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 (POM-216)

(2) F-HECP Title Page

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

(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 system). As there are not to be any standing HEC Procedures, there needs to be documentation of the initiation of a request.

NOTE: This form is also to be used to request Hot-Line Orders.

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(5) Hazardous Energy Work Permit

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

Formally documents the coordination between Reclamation and Contractor personnel to authorize work by Contractor's forces on or near Reclamation facilities when a Clearance or a Hot Line Order is required. This form includes:

(a) Contractor name.

(b) Special Work Permit number.

(c) Clearance or Hot Line Order number.

(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 and Reclamation Representatives have:

(i) Discussed the work to be performed,

(ii) Reviewed the details of the Clearance or Hot Line Order for adequacy, and

(iii) Verified understanding regarding:

(A) Placement of:

1. Shorts,
2. Jumpers, and
3. Personal protective ground(s).

(B) 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 and Reclamation Representatives certifying:

(i) All Contractor work associated with this Special Work Permit is complete,

(ii) Verification of removal of, or accounting for all:

(A) Shorts,

(B) Jumpers, and

(C) Personal protective ground(s)

(iii) All Contractor personnel and Equipment are in the clear.

(8) Switching Program Form

(a) Purpose

The Switching Program Form 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 Switching Program Form 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 can 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) A Switching Program Form must be prepared by an Operations Supervisor and checked by a second Operations Supervisor.

(ii) A Switching Program Form will not be valid for Switching until signed and dated by the preparing and checking Operations Supervisors.

(iii) Previously prepared Switching Program Forms may be used for reference only.

(iv) The Switching Program Form (or a copy) must be carried by the Switchman during Switching.

(v) The Switching Program Form 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 Switching Program Form must adhere to the following:

(A) Only one operation per step on the Switching Program Form.

1. Checking one device in the desired position and Locking or Tagging it must be considered one step.

2. Operating one device and Locking or Tagging it in the desired position must be considered one step.

3. A communication action must be numbered as one step on the Switching Program Form.

(B) The Equipment description, for a Switching step, must be specific enough to identify the device.

(C) The Switching Program Form must identify the locations of the Locks and Tags for a Hot Line Order or Clearance.

(D) Be legibly generated in indelible ink.

(E) Contain no erasures.

(viii) Corrections or changes to the Switching Program Form must be:

(A) At the discretion of the Operations Supervisor,

(B) Documented,

(C) Initialed by the Operations Supervisor, and

(D) Checked and initialed by a second Operations Supervisor.

(ix) When the Switching Program Form cannot be sent to the Switchman:

(A) Available communication channels must be used to provide the Switching steps to the Switchman.

(B) The Switchman will write down all Switching steps.

(C) The Operations Supervisor and Switchman must utilize Three-Part Communications.

(x) The initial placement and final removal of all personal protective ground(s) must be documented on the cover page of the Switching Program Form. It is not required to track relocation of personal protective grounds. Documentation must include:

(A) The personal protective ground identification number(s);

(B) Date and time;

(C) The name of the Employee who placed or removed the personal protective ground(s); and,

(D) The initial placement location of the personal protective ground(s).

5.6 Other Forms

Examples of these forms are shown in appendix E. They are also available on the Reclamation intranet site.

(1) General

The following forms have been standardized and may be used in this program:

(a) FIST Revision Request (POM-226)

(b) Hazardous Energy Work Permit Record (POM-217)

(c) Personal Lockout and Tagout Record (POM-218)

(d) Special Condition Tag Record (POM-219)

(e) Special Work Permit Record (POM-220)

(f) Proficiency Checksheets:

(i) Authorized Employee (POM-221)

(ii) Job Supervisor (POM-222)

(iii) Switchman (POM-223)

(iv) Operations Supervisor (POM-224)

(2) FIST Revision Request

This standard form is used to suggest or request a revision or change in a given FIST volume.

(3) Hazardous Energy Work Permit Record

This form is used to document the authorization and expiration of Hazardous Energy Work Permits (see section 14.2). This form's use will be described in the F-HECP.

(4) Personal Lockout and Tagout Record

This form is used to document the placement and removal of Locks and Tags under Personal Lockout and Tagout (see section 10). This form's use will be described in the F-HECP.

(5) Special Condition Tag Record

This form is used to document the placement and removal of Special Condition Tags (see section 8.4). This form's use will be described in the F-HECP.

(6) Special Work Permit Record

This form is used to document the issue and release of Special Work Permits (see section 16). This form's use will be described in the F-HECP.

(7) Proficiency Checksheets

These example forms are used to evaluate the proficiency of employees by the supervisor prior to making a recommendation to the Responsible Official. These form's use will be described in the F-HECP.

Checksheets are for:

(a) Authorized Employee,

(b) Switchman,

(c) Operations Supervisor, and

(d) Job Supervisor.

6. Station Log Entries

All 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 Switching Program Form, entries in the dispatch center, control center, or station log must be made as follows:

6.1 Colors

(1) Red must be used for issuing Clearances (and Hot Line Orders).

(2) 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
- (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
- (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, Operational Configuration Management Switching, and Special Conditions. A readily accessible file of Switching Program Forms will be maintained for current Clearances, Hot Line Orders, Special Conditions, and Special Work Permits.

7. Tracking Record Entries

7.1 Personal Lock and Tag Record

(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 systems) does or does not require coordination with Operations.

(3) Location of the record(s) will be described in the F-HECP and must be reviewed by the Operations staff during their rounds.

(4) The information to be recorded at a minimum is the following:

(a) Date and Time Placed,

(b) Date and Time Removed,

(c) Placed and Removed by, and

(d) Device Location and Equipment.

7.2 Special Condition Tag Record

(1) Placement and removal of all Special Condition Tags must be recorded.

(2) Location of the record(s) will be described in the F-HECP and must be reviewed by the Operations staff during their rounds.

(a) The information to be recorded at a minimum is the following:

(i) Tag Number,

(ii) Original Date and Time Placed,

(iii) Placed and Removed by,

(iv) Device Location and Equipment,

(v) Date and Time Removed,

(vi) Current Review Date and Reviewer, and

(vii) Remarks.

7.3 Special Work Permit Record

(1) Issuance and Release of all Special Work Permits must be recorded.

(2) Location of the record(s) will be described in the F-HECP, and must be reviewed by the Operations staff during their rounds.

(3) The information to be recorded at a minimum is the following:

(a) Special Work Permit Number,

(b) Date and Time Issued,

(c) Device Location and Equipment, and

(d) Date and Time Released.

7.4 Hazardous Energy Work Permit Record

(1) Authorization and Expiration of all Hazardous Energy Work Permits must be recorded.

(2) Location of the record(s) will be described in the F-HECP and must be reviewed by the Operations staff during their rounds.

(3) The information to be recorded at a minimum is the following:

(a) Hazardous Energy Work Permit Number,

(b) Date and Time Authorized,

(c) Job Supervisor

(d) Device Location and Equipment, and

(e) Expiration Date and Time.

8. 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 (see sections 1.9 and 2.3),

(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 and are addressed in other sections of this document.

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) Switching Program Form,

(b) Standing Operating Procedure (SOP),

(c) Job plan, or

(d) JHA

(3) All configuration changes must be recorded.

(4) The Operations Supervisor must:

(a) Determine what Equipment (or system) needs to be reconfigured.

(b) Ensure appropriate written procedure is prepared using drawings, SOPs, technical papers, or other technical references.

(c) Coordinate with appropriate agencies and other entities as needed.

(d) If no other procedure is utilized, a Switching Program Form must be prepared. Previously prepared Switching Program Forms may be used as a reference.

(e) Ensure the prepared Switching Program Form is checked by a second Operations Supervisor.

(f) Conduct a Job Briefing with the Switchman.

(g) Resolve any questions regarding the completeness or correctness of the written procedure.

(h) Direct the Switchman to perform the Switching.

(5) The Switchman must:

(a) Perform operations in the sequence listed on the written procedure.

(b) Use the Six Basic Steps of Switching (see section 1.2.(2)).

(c) Stop 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 written procedure; or

(v) A dangerous condition could result by performing a step.

(d) Verify the effectiveness of Operations Locks placed.

(e) Record on the written procedure when required:

(i) The time at which each step is completed,

(ii) The Switchman's initials.

(f) Report to the Operations Supervisor upon completion of Switching.

(6) The Operations Supervisor must record the Operational Configuration Management action in the station log.

8.3 Positive Controls in Public Access Areas

Locks or other positive controls must be installed on the Energy Isolation Devices in areas:

(1) With nonrestricted 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 the 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, a replacement Special Condition Tag will be placed. The replacement Special Condition Tag must be updated to reflect current 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 such condition to the Operations Supervisor or a supervisor. The Operations Supervisor must determine if the Special Condition exists, provide any necessary instructions, and assign a unique identifying number to each Special Condition Tag. Numbering format must be identified in the F-HECP. Where provided, display screen Supervisory Control and Data Acquisition (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. In addition, a record will be maintained as described in the F-HECP. A sample Special Condition Tag record sheet is provided in appendix E.

8.5 Capacitor Banks

(1) At least 5 minutes must elapse between the Deenergizing of a capacitor bank and the closing of its ground switch.

(2) A capacitor bank must remain Deenergized for at least 5 minutes before it is reenergized.

(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 Switching Program Form.

9. 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 release of their Clearance in their absence. The Release under Abnormal Conditions Form (see section 5.5.(6)) 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 (release) the Personal Lock or Tag (Clearance) in the following manner:

(1) The Authorized Employee's supervisor must verify that the Authorized Employee who placed the Personal Lock or Tag (holds the Clearance) is not at the facility.

(2) The Authorized Employee's supervisor must make reasonable efforts to inform the Authorized Employee that their Personal Lock or Tag (Clearance) will be removed (released).

(3) The Authorized Employee's supervisor must take responsibility for the Personal Lock or Tag (Clearance).

(4) If applicable, a new Job Supervisor must request and accept an identical Clearance prior to release of the original Clearance.

(5) The Authorized Employee's supervisor must authorize the removal (release) of the Personal Lock or Tag (Clearance).

(6) The Authorized Employee's supervisor must direct the removal of the Personal Lock or Tag.

(7) The Authorized Employee's supervisor must inform the Authorized Employee upon their return to the facility and prior to commencing work that their Personal Lock or Tag (Clearance) has been removed (released).

10. Personal Lockout (Tagout)

10.1 Use Restrictions

Personal Lockout (Tagout) must NOT be used when the protection requires a Clearance (see section 11.). An Employee must NOT work under the protection of another Employee's Lock (Tag).

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 (see section 8.2.(2)) identifying where the Personal Lock (Tag) is to be placed.

(2) Placement and removal of all Personal Lock(s) (Tag(s)) must be:

(a) Coordinated with operations,

(b) Approved by an Operations Supervisor,

(c) Documented, and

(d) Recorded.

(3) Up to four Personal Locks (Tags) may be used by an Authorized Employee on the Energy Isolation Points for 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 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.

(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 of 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 Deenergization 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, and

(c) Performing any required tests necessary to ensure full operational capability.

11. Clearances

11.1 Use

A Clearance is a formalized process used to establish an environment which allows Authorized Employees to safely perform their assigned tasks. A Clearance is used for protection of personnel but may 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 that can be entered by personnel;

(4) Work in the turbine pits, near Hazardous Energy such as wicket gate arms and servo systems;

(5) High Pressure systems (see section 1.11):

(a) Air,

(b) Water, and

(c) Oil.

(6) Equipment (or system) that requires more than four Energy Isolation Points;

(7) Contractor work involving Isolation of Hazardous Energy.

11.2 Use of Personal Locks and Personal Tags

(1) Personal Locks and Personal Tags must not be used on the Energy Isolation points 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 Lock (Tag).

11.3 Procedure

(1) Request Clearance

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.

(c) Submit the Clearance Request to the Operations Supervisor as soon as possible but should not be less than 24 hours. Specific requirements will be identified in the F-HECP.

(2) Prepare and Place Clearance

(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 an outage.

(ii) Verify by the use of drawings, SOPs, 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.

(iii) Coordinate with appropriate agencies and other entities for Isolation of systems that are to be cleared (see section 13).

(iv) Prepare a Switching Program Form for placement (a Switching Program Form for removal can be prepared concurrently). Previously prepared Clearances may be used as a reference.

(v) Ensure the prepared Switching Program Form is checked by a second Operations Supervisor.

(vi) Conduct a Job Briefing with the Switchman.

(vii) Direct the Switchman to perform the Switching.

(b) The Switchman must:

(i) Perform operations in the sequence listed on the Switching Program Form.

(ii) Accomplish Switching by using the Six Basic Steps of Switching (see section 1.2.(2)).

(iii) Stop Switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:

(A) The instruction is not clearly understood;

(B) The instruction is believed to be incorrect;

(C) At any point in the operations, an unexpected relay, breaker, or other action occurs;

(D) A device is found in a position other than indicated on the switching program form; or

(E) A dangerous condition could result by performing a step.

(iv) Verify the effectiveness of Clearance Lock (Tag).

(A) The Clearance Lock (Tag) must be attached directly to the Energy Isolation Device whenever possible.

(B) 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 Isolation Device, in a position that will be immediately obvious to anyone attempting to operate the Energy Isolation Device.

(v) Record, on the Switching Program Form:

(A) The time at which each step is completed,

(B) Lock or Tag number placed, and

(C) The Switchman’s initials.

(vi) 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.

(vii) Report to the Operations Supervisor that Switching is complete.

(c) The Operations Supervisor must:

(i) Record the Clearance placement action in the station log.

(ii) Notify the Job Supervisor that the Clearance has been placed.

(3) Accept and Issue Clearance

(a) The Job Supervisor must:

(i) Obtain a copy of the Switching Program Form from the Operations Supervisor.

(ii) Place their Personal Lock on the Clearance Lockbox to secure the Clearance key(s).

(iii) Verify the position of the Energy Isolation Devices.

(iv) Verify the placement of all Clearance Locks and Tags.

(v) Verify the effectiveness of Clearance Lock (Tag).

(vi) Make appropriate tests to verify Isolation and Deenergization of the Equipment (or system).

(vii) Verify that stored energy has not re-accumulated in the Equipment (or system).

(viii) Contact the Operations Supervisor for resolution if any of the following are encountered:

(A) A device is found in a position other than that indicated on the Switching Program Form, or

(B) A dangerous condition exists.

(ix) Inform the Operations Supervisor:

(A) That the Clearance is adequate, and

(B) Assume full responsibility for their Clearance.

(x) Sign the Switching Program Form documenting accepting the Clearance.

(b) The Operations Supervisor must:

(i) Sign the Switching Program Form documenting issuing the Clearance to the Job Supervisor.

(ii) Log issuing the Clearance in the station log (see section 6).

(4) Working Under a Clearance

(a) The Job Supervisor must:

(i) Direct the Authorized Employee to place the personal protective ground(s).

(ii) Notify the Operations Supervisor of the initial placement of personal protective ground(s).

(b) The Operations Supervisor must record the following information on the Switching Program Form cover page:

(i) The personal protective ground identification number(s),

(ii) Date and time of placement,

(iii) Who placed the personal protective ground(s), and

(iv) Location of initial placement.

(c) The Job Supervisor must:

(i) Verify, as appropriate, that stored energy has not re-accumulated to a hazardous level in the Equipment (or system).

(ii) Be responsible for granting permission to Authorized Employees to work under their Clearance, including:

(A) Review of the JHA,

(B) Verify the Energy Isolation points that establish the limits of the Clearance are understood and the work can be safely performed,

(C) Verify that the Authorized Employee understands their responsibility to maintain awareness of the Clearance status while working.

(iii) Keep the Operations Supervisor informed as to the status of the work.

(iv) Promptly notify each Authorized Employee working under the Clearance as to any changes in condition or status of the Equipment.

(d) The Authorized Employee must:

(i) Be responsible for obtaining permission from the Job Supervisor to work under their Clearance, including:

(A) Review of the JHA;

(B) Place their Personal Lock on the Clearance Lockbox to secure the Clearance key(s);

(C) Verify that they understand the Energy Isolation points that establish the limits of the Clearance;

(D) Verify the placement of all Clearance Locks and Tags;

(E) Maintain awareness of the Clearance status while working.

(ii) Contact the Job Supervisor for resolution if any of the following are encountered:

(A) A device is found in a position other than that indicated on the Switching Program Form or

(B) A dangerous condition exists.

(iii) Be responsible for requesting from the Job Supervisor, any additional protection they deem necessary.

(iv) Upon completion of their work:

(A) Remove all Equipment, tools, and material used from the work area;

(B) Remove Personal Lock from the Clearance Lockbox;

(C) Notify the Job Supervisor that the work area is clear of their Equipment, tools, and material, and their Lock has been removed from the Clearance Lockbox.

(5) Release and Remove Clearance

(a) Upon completion of all work, the Job Supervisor must:

(i) Notify all involved Authorized Employees of the intent to release the Clearance.

(ii) Inspect the work area(s) to ensure that:

(A) Nonessential items have been removed from the Equipment;

(B) The components are operationally intact, and

(C) All personnel are in the clear.

(iii) Direct the Authorized Employee to remove the personal protective ground(s).

NOTE: The complexities of Equipment (or system) maintenance may require a Job Supervisor to remove personal protective grounds without releasing the Clearance.

(iv) Notify the Operations Supervisor of the removal of personal protective ground(s).

(b) The Operations Supervisor must log the following information on the Switching Program Form cover page:

(i) Date and time of removal, and

(ii) Who removed the personal protective grounds(s).

(c) The Job Supervisor must:

(i) Notify the Operations Supervisor that all work is complete.

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.

(ii) Remove their Personal Lock from the Clearance Lockbox.

(iii) Sign the Switching Program Form documenting release of the Clearance to the Operations Supervisor.

(d) The Operations Supervisor must:

(i) Record the release of the Clearance in the station log.

(ii) Prepare a Switching Program Form for removal.

(iii) Coordinate with appropriate agencies and other entities for system restoration (see section 13).

(iv) Conduct a Job Briefing with the Switchman.

(v) Direct the Switchman to perform the Switching.

(e) The Switchman must:

(i) Remove the Operations Lock from the Clearance Lockbox and obtain the key for the Clearance Lock(s).

(ii) Perform operations in the sequence listed on the Switching Program Form.

(iii) Accomplish Switching by using the Six Basic Steps of Switching (see section 1.2.(2)).

(iv) Stop Switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:

(A) The instruction is not clearly understood;

(B) The instruction is believed to be incorrect;

(C) At any point in the operations, an unexpected relay, breaker, or other action occurs;

(D) A device is found in a position other than indicated on the switching program form; or

(E) A dangerous condition could result by performing a step.

(v) Record, on the Switching Program Form:

(A) The time at which each step is completed;

(B) Lock or tag number removed, and;

(C) The switchman's initials.

(vi) Report to the Operations Supervisor upon completion of Switching.

(f) The Operations Supervisor must record the Clearance removal action in the station log.

(6) Identical Clearance

(a) Purpose

This is the process to issue two or more concurrent Clearances on the same Equipment requiring the same Energy Isolation points that establish the limits of the Clearance and exactly the same Clearance Lock(s) and Tag(s) application.

(b) Procedure

(i) The Job Supervisor, Operations Supervisor, and Authorized Employees involved with an identical Clearance must follow the process defined in Section 11.3, Clearance Procedure.

(ii) Job Supervisors have the responsibility to discuss and coordinate the work to be performed.

(iii) All Job Supervisors must assume full responsibility for their Clearance.

(iv) The Switching Program Form must be marked distinctively to indicate an identical Clearance. The same Clearance number will be assigned a different suffix letter (A, B, C, etc.) or suffix number (-1, -2, -3, etc.) to identify each additional Clearance.

(v) 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.

(vi) Identical Clearances may be released in any order.

(c) Changing Job Supervisor

When the Job Supervisor leaves the facility for an extended period a new Job Supervisor will 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 as defined in section 11.3.(6) 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.

11.4 Clearances at Remote Sites

Clearances at remote sites where communications with the Operations Supervisor are not possible will be conducted as described in the F-HECP. However, such procedures will meet the requirements of section 11.3

11.5 Limits of the Clearance

(1) Changing the Limits of the Clearance

(a) The Limits of the Clearance cannot be changed.

(b) The scope of work may change such that it requires a change in the Energy Isolation points.

(c) This change can be accomplished in one of two ways. The Job Supervisor must request a new clearance (see section 11.3.(1)).

(i) Preferred process:

(A) Prepare and place, the new clearance (see section 11.3.(1)).

(B) Accept and issue the new clearance (see section 11.3.(2)).

(C) Release and remove the original clearance (see section 11. 3.(5)).

(ii) Alternative process:

(A) Prepare a Switching Program Form for placement of the new Clearance, listing each Clearance Lock (Tag) being transferred and any new Energy Isolation points.

(B) Prepare a Switching Program Form 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.

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.

(D) Complete switching for placement verifying transferred Clearance Lock(s) (Tag(s)) in place.

(E) Complete switching for removal leaving transferred Clearance Lock(s) (Tag(s)) in place.

(F) Complete the "Accept and Issue Clearance" procedure above (see section 11.3.(3)).

(2) Checks and Tests on an Energy Isolation Device at the Limits of a Clearance

Checks And Tests Are Not Permitted On An Energy Isolation Device Secured With A Clearance Lock (Tag).

(3) Checks and Tests on Equipment (or Systems) Protected by a Clearance

(a) Checks and tests on Equipment (or systems) protected by a Clearance is permitted when:

(i) A job hazard analysis has been prepared.

(ii) A written test procedure has been prepared.

(iii) A job briefing is performed with all affected personnel.

(iv) All administrative controls including barriers or signs have been implemented to identify and protect against the induced hazardous energy.

(v) All work activity affected by the induced hazardous energy has been suspended.

12. Hot Line Orders

12.1 Use

(1) A Hot Line Order permits work to be done on or near Energized electrical Equipment for transmission and or distribution lines.

(2) 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 (see section 15). An Operations Lock may be used in conjunction with a Hot Line Tag.

(3) 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) A Hot Line Order must NOT be issued where work is being performed on the line's:

   (a) Protective relays,

   (b) Control circuits, and,

   (c) Communication Equipment.

(3) Work must not be performed on the following systems that would compromise the tripping of any circuit breakers involved in the Hot Line Order:

   (a) Protective relays,

   (b) Control circuits, and

   (c) Communication Equipment.

(4) Communications must be maintained between the Operations Supervisor and the Job Supervisor.

(5) 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

The Job Supervisor must:

(a) Determine if the facility requirements indicate the necessity of a Hot Line Order, including preparation or review of the JHA.

(b) Ensure, by the use of drawings, SOPs, technical papers, or other technical references, that the Equipment to be placed under Hot Line Order will be effective for the work to be performed.

(c) Submit the Outage Request to the Operations Supervisor as soon as possible, but it should not be less than 24 hours. Specific requirements 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 the Equipment to be placed under a Hot Line Order will be effective for the work to be performed.

(iii) Coordinate with appropriate agencies and other entities for lines that are to be placed under a Hot Line Order (see section 14).

(iv) Prepare a Switching Program Form for placement (a Switching Program Form for removal can be prepared concurrently). Previously prepared Hot Line Orders may be used as a reference.

(v) Ensure the prepared Switching Program Form is checked by a second Authorized Employee.

(vi) 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. If there are any questions regarding the completeness or correctness of the Switching Program Form, these questions must be resolved before proceeding.

(vii) Direct the Switchman to perform the Switching.

(b) The Switchman must:

(i) Perform operations in the sequence listed on the Switching Program Form.

(ii) Accomplish Switching by using the Six Basic Steps of Switching (see section 1.2.(2)).

(iii) Stop Switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:

(A) The instruction is not clearly understood;

(B) The instruction is believed to be incorrect;

(C) At any point in the operations, an unexpected relay, breaker, or other action occurs; or

(D) A device is found in a position other than indicated on the Switching Program Form.

(iv) Record on the Switching Program Form:

(A) The time at which each step is completed,

(B) Tag number placed, and

(C) The switchman's initials.

(v) Report to the Operations Supervisor upon completion of switching.

(c) The Operations Supervisor must:

(i) Record the Hot Line Order placement action in the station log.

(ii) Notify the Job Supervisor that the Hot Line Order has been placed.

(3) Accept and Issue Hot Line Order

(a) The Job Supervisor must:

(i) Obtain a copy of the Switching Program Form from the Operations Supervisor.

(ii) Verify 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 Switching Program Form.

(v) Inform the Operations Supervisor:

(A) That the Hot Line Order is adequate, and;

(B) Responsibility for the Hot Line Order will be accepted.

(vi) Sign the Switching Program Form documenting accepting the Hot Line Order.

(b) The Operations Supervisor must:

(i) Sign the Switching Program Form documenting issuing the Hot Line Order to the Job Supervisor.

(ii) Log issuing the Hot Line Order in the station log (see section 6).

(4) Release and Remove a Hot Line Order.

(a) The Job Supervisor must:

(i) Notify all involved Authorized Employees of the intent to release the Hot Line Order.

(ii) Inspect the work area(s) to ensure that:

(A) Nonessential items have been removed from the Equipment;

(B) The components are operationally intact;

(C) All personnel are in the clear.

(iii) Notify the Operations Supervisor of the status of the Equipment.

(iv) Release the Hot Line Order to the Operations Supervisor by signing the Switching Program Form.

(b) The Operations Supervisor must:

(i) Record the release of the Hot Line Order in the station log.

(ii) Prepare a Switching Program Form for removal.

(iii) Coordinate with appropriate agencies and other entities for system restoration (see section13).

(iv) Conduct a Job Briefing with the authorized Switchmen to include a review of hazards, work procedures, PPE requirements, special precautions, etc. If there are any questions regarding the completeness or correctness of the Switching Program Form, these questions must be resolved before proceeding.

(v) Direct the Switchman to perform the Switching.

(c) The Switchman must:

(i) Perform operations in the sequence listed on the Switching Program Form.

(ii) Accomplish Switching by using the Six Basic Steps of Switching (see section 1.2.(2)).

(iii) Stop Switching procedure and contact the Operations Supervisor for resolution if any of the following conditions are encountered:

(A) The instruction is not clearly understood;

(B) The instruction is believed to be incorrect;

(C) At any point in the operations, an unexpected relay, breaker, or other action occurs; or

(D) A device is found in a position other than indicated on the Switching Program Form.

(iv) Record on the Switching Program Form:

(A) The time at which each step is completed;

(B) Tag number removed; and

(C) 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.

(5) Procedures for a Line That Has Tripped Out While Under a Hot Line Order

(a) The Operations Supervisor must contact the Job Supervisor holding the Hot Line Order to determine if it is safe to reenergize the line.

(b) The Job Supervisor must:

(i) Immediately order all personnel and equipment clear of the line.

(ii) Ascertain if the line within his work area can be safely reenergized.

(iii) Contact the operations supervisor.

(c) The Operations Supervisor must direct the Switchman to close the circuit breakers.

(d) The Switchman must:

(i) Remove the Hot Line Tag from the control switch and operate the control switch to close the circuit breaker.

(ii) 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.

(e) The Operations Supervisor must:

(i) Record the pertinent information on the trip and closure in the station log.

(ii) Inform the Job Supervisor that the circuit breakers have been closed and that the line is Energized.

(6) 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 will be assigned or the work will stop. The F-HECP will describe the process for changing the Job Supervisor.

(7) Change 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 (see section 12.3.(1)).

13. Interconnected System Clearances and Hot Line Orders

13.1 Use

(1) Interconnected System Clearances or Hot Line Orders provide for the protection of personnel at points of interconnection between Reclamation and Non-Reclamation facilities.

(2) 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

(1) Issue Interconnected System Clearance Or Hot Line Order

(a) The Non-Reclamation Operations Supervisor will request the appropriate protection on the Reclamation system.

(b) The Reclamation Operations Supervisor must:

(i) Place the Clearance or Hot Line Order in accordance with the established procedures on the requested Equipment.

(ii) Utilize 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 will confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood.

(iii) Issue the Interconnected System Clearance or Hot Line Order to the Non-Reclamation Operations Supervisor; document this action on the Switching Program Form and in the station log.

(2) Receive Interconnected System Clearance Or Hot Line Order

(a) The Reclamation Operations Supervisor will request the appropriate protection on the Non-Reclamation system.

(b) The Non-Reclamation Operations Supervisor will:

(i) Place the Clearance or Hot Line Order in accordance with their established procedures on the requested Equipment.

(ii) Utilize Three-Part Communication to state clearly to the Reclamation Operations Supervisor exactly what protection has been provided. The Reclamation Operations Supervisor must restate the exact protection provided and state that he is satisfied that the protection meets the requirements. The Non-Reclamation Operations Supervisor will confirm the protection provided. If the restatement is incorrect, the process will be repeated until the protection provided is correctly understood.

(c) The Reclamation Operations Supervisor will accept the Interconnected System Clearance or Hot Line Order from the Non-Reclamation Operations Supervisor, document this action on the Switching Program Form, and make the appropriate entry in the station log.

(3) Release Interconnected System Clearance or Hot Line Order

(a) The release of the Interconnected System Clearance or Hot Line Order will be initiated by the appropriate Operations Supervisor.

(b) Appropriate Three-Part Communication must be used.

(c) Release actions must be documented on the Switching Program Form and in the station log.

(d) If appropriate, remove the Clearance or Hot Line Order in accordance with the established procedures on the requested Equipment.

14. Nonstandard Hazardous Energy Control Procedures

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 should be made to minimize the hazards, add engineering controls, add administrative controls (signage, training, safety meetings, boundaries), and use personnel protective equipment. 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 Deenergized. Possible sources include, but are not limited to:

(a) Rotating Equipment

(b) Compressed air systems

(c) Tensioned springs

(d) Pressurized hydraulic systems

(e) Working in or near active waterways

(f) Tapping a pressurized system

(g) Working on or near high-pressure water systems

(h) Adjustment on servo-motor or wicket gate arms

(i) Chlorine and other chemical systems

(j) Working below crane or other lifting devices

(k) Gravity fed sources – falling rocks or Equipment

(l) Performing x-ray inspections and non-destructive testing

(m) Non-ionizing radiation – laser and microwave radio frequency energy

(3) The Responsible Official must be aware of all forms of Hazardous Energy within the work area and mitigate the potential for injury. The Responsible Official may authorize Energized work where it can be demonstrated that:

(a) Deenergization introduces additional or increased hazards.

(b) The task to be performed is infeasible in a Deenergized state due to Equipment design or operational limitations.

(c) A Hazardous Energy Work Permit has been completed.

14.2 Hazardous Energy Work Permit

(1) The Hazardous Energy Work Permit is intended to ensure that the increased risk and increased possibility of injuries associated with exposure to Hazardous Energy receives adequate consideration.

(2) Exemption to the Hazardous Energy Work Permit Work performed within the work area by Authorized Employees related to tasks, such as visual inspection, testing, troubleshooting, measurement, or other similar tasks, must be permitted without a Hazardous Energy Work Permit, provided:

(a) A JHA is prepared to identify safe work practices, and

(b) A job plan is prepared with sufficient detail to perform work safely.

14.3 Procedure

The Job Supervisor must:

(1) Determine if the facility requirements indicate the necessity of a Hazardous Energy Work Permit, including preparation or review of the JHA and job plan.

(2) Ensure, by the use of drawings, SOPs, technical papers, or other technical references that the procedure utilizing the Hazardous Energy Work Permit will be effective for the work to be performed.

(3) Prepare the Hazardous Energy Work Permit.

(4) Submit the Hazardous Energy Work Permit for review and concurrence by those individual(s) identified as performing these responsibilities:

(a) Safety Professional

(b) Maintenance Manager

(c) Operations Manager

(d) Facility Manager

(5) Submit the Hazardous Energy Work Permit for review and authorization by the Responsible Official.

15. 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 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) Placement of supervisory control information tags on the display screen should be referenced on all Switching Program Forms involving supervisory controlled Equipment.

(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) When 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.

(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. Special Work Permits

Reclamation Safety and Health Standards, section 15.6 and appendix K, also cover Special Work Permits. FIST Volume 1-1 only deals with Special Work Permits that require issuance of a Hazardous Energy Control Procedure.

16.1 General

(1) Contractors performing work at Reclamation-operated and maintained facilities must comply with the F-HECP.

(2) A Special Work Permit documents the coordination between Reclamation and a Contractor, to authorize work when a HEC Procedure is required.

(3) Section 11.1 identifies the minimum requirements for a Clearance. The F-HECP must designate additional requirements for a Clearance associated with Contractor work.

(4) The Reclamation Job Supervisor may be the same individual as the Reclamation Representative.

(5) Training may be provided to Reclamation Contractors.

(6) Familiarization of the Non-Reclamation Contractor Representative on Reclamation's F-HECP will be provided. This will permit the Non-Reclamation Contractor Representative to place their lock in step 16.2.(6).

(7) Familiarization of Reclamation staff on the Non-Reclamation Contractor's HECP is covered in the RSHS.

16.2 Procedure for Issuing Special Work Permits

(1) The Contractor Representative will identify to the Reclamation Representative the need for Equipment Isolation. The Contractor Representative at the worksite must review the plan for accomplishing the work with the Reclamation Representative in such detail as may be necessary for the Reclamation Representative to determine the Hazardous Energy Isolation.

(2) The Reclamation Representative will communicate the need for Equipment Isolation to the Operations Supervisor.

(3) A Special Work Permit will be prepared by the Reclamation Representative. See Section 5 5 (7) for a description of preparation of the Special Work Permit.

(4) The Clearance procedure described in section 11 will be followed.

(5) The Reclamation Representative and the Contractor Representative at the worksite must inspect the worksite to verify the adequacy of the protection provided.

(6) The Contractor Representative at the worksite must place a Lock on the Reclamation Clearance Lockbox. The Contractor Representative's key will be secured in accordance with the Contractor's HECP

(7) The Operations Supervisor will assign a unique number for each Special Work Permit. A Special Work Permit will be issued for each Clearance.

(8) The Special Work Permit will be signed by the parties. No work will be done until a Special Work Permit has been signed. No work will be done in an area not specifically covered by the Special Work Permit.

(9) The signed original Special Work Permit will remain with the Operations Supervisor, and copies will be provided to the Reclamation Representative and Contractor Representative at the worksite.

16.3 Placing and Removal of Personal Protective Ground(s)

(1) If, in the opinion of Reclamation's Representative and Job Supervisor, a Contractor is sufficiently knowledgeable in and adequately equipped for personal protective grounding, the Contractor may place and remove personal protective grounds at the worksite in accordance with applicable safety standards and FIST 5-1, under the observation of a Reclamation Authorized Employee. The Reclamation Job Supervisor must notify the Operations Supervisor of the placement or removal of all Contractors personal protective grounds (see section 11.3).

(2) If, in the opinion of Reclamation's Representative and Job Supervisor, a Contractor is not sufficiently knowledgeable in or adequately equipped for personal protective grounding, the Contractor may not place and remove personal protective grounds. The Reclamation Job Supervisor must direct a Reclamation Authorized Employee to place or remove all required personal protective grounds. The Reclamation Job Supervisor must notify the Operations Supervisor of the placement or removal of all Contractors personal protective grounds (see section 11.3).

16.4 Procedure for Releasing Special Work Permits

(1) Upon completion of all work, the Contractor Representative at the worksite must:

(a) Notify the Reclamation Representative that:

(i) All personnel are clear,

(ii) All materials have been removed, and

(iii) The work is complete.

(b) Sign the Special Work Permit, releasing it to the Reclamation Representative.

(2) The Reclamation Representative must verify:

(a) The work is complete,

(b) All workmen are clear, and

(c) All materials have been removed from the worksite.

(3) The Reclamation Representative must notify the Job Supervisor that the work is complete and sign the release of the Special Work Permit.

(4) The Job Supervisor must notify the Operations Supervisor that the work is complete and sign the release of the Special Work Permit.

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 Special Work Permit (change in protection needed, etc), a new Special Work Permit must be issued and the existing Special Work Permit released.

16.6 Change in Representative for a Special Work Permit

In the event that the original representative (Contractor Representative at the worksite, Reclamation Representative or Job Supervisor) is not available to release the existing Special Work Permit, the new representative must sign the release of the existing Special Work Permit. The new Special Work Permit must be issued before the existing Special Work Permit is released.

17. Authorized Non-Reclamation Personnel

17.1 When a Contractual Instrument Exists

Personnel of the non-Reclamation organization may be authorized to perform tasks as described in the terms of the Contractual Instrument. Procurement or Construction (Federal Acquisition Regulations) contracts are generally not included in this section. Examples of Contractual Instruments include but are not limited to:

(1) A Memorandum of Understanding,

(2) A Memorandum of Agreement,

(3) The Agreement of March 26, 1980, between the Western Area Power Administation (Western) and Water and Power Resources Service, that is Reclamation, (Service) (Master Agreement).

(4) Operating Agreements associated with the Master Agreement, for example:

   (a) Joint Operating Agreement (Lower Colorado Region),

   (b) Coordinated Operations and Maintenance Agreement (Mid-Pacific Region).

17.2 When a Contractual Instrument Does Not Exist

When a contractual instrument, as described in section 17.1, does not exist, all work will be performed under the requirements of a Special Work Permit (see section 16).

17.3 Requirements

(1) The non-Reclamation organization will transmit, in writing to the Area Manager or their designated representative, those individuals whom they deem to be qualified employees and the functions they are to perform including:

   (a) Request or accept Clearances,

   (b) Request or accept Hot Line Orders,

   (c) Perform Switching.

(2) Reclamation will annually train, examine and authorize the employees on the F-HECP.

(3) The non-Reclamation qualified employee's authorization will be listed on a non-Reclamation Employee Authorization List and maintained as required in the F-HECP.

(4) The Area Manager or their designated representative will transmit the non-Reclamation Employee Authorization List in writing to the non-Reclamation organization.

(5) All work must be coordinated with the Reclamation Operations Supervisor. The Reclamation Operations Supervisor must be notified before removing Equipment from service and before returning it to service.

Appendix A – References

(1) Department of Labor, Occupational Safety and Health Administration

(a) 29 CFR Part 1910.145, Specifications for Accident Prevention Signs and Tags

(b) 29 CFR Part 1910.147, The Control of Hazardous Energy (Lockout/Tagout)

(c) 29 CFR Part 1910.269, Electric Power Generation, Transmission, and Distribution

These OSHA documents are available at: www.osha.gov.

(2) U.S. Department of the Interior, Bureau of Reclamation

(a) Reclamation Manual, Directives and Standards, SAF 01-01

(b) Reclamation Safety and Health Standards (RSHS)

(c) Reclamation Facilities, Instructions, Standards and Techniques - (FIST) Volumes:

(i) Volume 3-29, Energized Facility Maintenance

(ii) Volume 4-1, A Maintenance Scheduling for Mechanical Equipment

(iii) Volume 4-1B, Maintenance Scheduling for Electrical Equipment

(iv) Volume 5-1, Personal Protective Grounding for Electric Power Facilities and Power Lines

(v) Volume 5-12, CO_2 Systems – Operations and Maintenance

(vi) Volume 5-14, Arc Flash Hazard Program

(vii) Volume 6-3, Unexpected Event Reporting

(d) Power Review of Operations and Maintenance Program

Reclamation documents listed here are available at the Reclamation internet or intranet site.

(3) American National Standards Institute (ANSI) Standards:

(a) ANSI/ASSE Z244.1, Control of Hazardous Energy – Lockout/Tagout and Alternative Methods

(b) Z535.5, Safety tags and barricade tapes (for temporary hazards)

(4) National Fire Protection Association Standards:

(a) NFPA 70B, Recommended Practice for Electrical Equipment Maintenance

(b) NFPA 70E, Standard for Electrical Safety in the Workplace

Appendix B – Definitions

Arc Flash Hazard: A dangerous condition associated with the possible release of energy caused by an electric arc.

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 all sources of Hazardous Energy.

Clearance (limits of the…): The established energy Isolation points on Equipment (or system) declared isolated from all sources of Hazardous Energy.

NOTE: Equipment that remains energized, or can be energized, is not a part of the limits of the Clearance.

Contractor: As used in Special Work Permits, will include:

(1) **Non-Reclamation –** Construction and or maintenance personnel of Non-Reclamation organizations, or;

(2) **Reclamation –** Reclamation personnel who are not Authorized Employees at the facility.

Deenergized: (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.

Department of the Interior Learn (DOI Learn): The Web-based application mandated by the U.S. 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,

(c) The Reclamation power or water system equipment, or

(2) There is a power outage to customers that could be hazardous to life or property.

Employee:

(1) Authorized – An employee who has been trained, tested, and is authorized by the Responsible Official to perform specific Hazardous Energy Control (HEC) Procedures.

(2) Incidental – An employee who has access to an area containing Equipment or controls affected by an HEC Procedure.

Employee Authorization List: A current list identifying each Authorized Employee's Hazardous Energy Control Program (HECP) responsibilities.

Energized:

(1) Electrical – Electrically connected to, or is, a source of voltage.

(2) All Other Forms of Energy – Connected to an energy supply or containing residual or stored energy.

Energy Source: Any supply of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other energy that could cause injury to personnel.

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.

Equipment (or system): Any machine, device, or apparatus, either electrical or mechanical, including electrical circuits, transmission lines, piping, or waterways used in the generation, transmission, or control of electric power, or control of waterways not directly related to power generation, such as spillways, irrigation outlets, conservation facilities, pump stations, etc.

A system is any assembly of electronic, electrical, or mechanical components with interdependent functions, usually forming a self-contained unit.

Facility Hazardous Energy Control Program (F-HECP): A program for facility or a group of facilities within an Area Office that includes integration of a copy of the FIST Volume 1-1 with specific facility requirements in a single document.

Hazardous Energy: Any Energy Source that may cause injury or death.

Hazardous Energy Control Procedures (HEC Procedures): These procedures are for the control of all Hazardous Energy and 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 those Federal facilities for which Reclamation is responsible. This Reclamation program is contained in FIST Volume 1-1.

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 reenergized until contact has been made with the Job Supervisor holding the Hot Line Order. A Hot Line Order may also be known as a terminal hold by non-Reclamation offices and personnel.

Interconnected System: The group of lines and associated Equipment for the movement or transfer of electric energy between points of supply and points at which it 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 should 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 (PPE) requirements.

Job Supervisor: An Employee who has been authorized by the Responsible Official to request, accept, and release Clearances and Hot Line Orders, and to initiate and implement Hazardous Energy Work Permits. This term designates a HECP function. It 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.**

Lockout: The placement of a Hazardous Energy Control Program Lock on the 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 Supervisor: Is an Employee who has been authorized by the Responsible Official to prepare and direct Switching; issue, receive, and release Clearances, Hot Line Orders, Interconnected System Clearances, and Interconnected System Hot Line Orders. This term designates a HECP function. It 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.**

Responsible Official: The manager who is responsible for the administration of the Facility Hazardous Energy Control Program.

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

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

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 Responsible Official to perform Switching (for Operational Configuration Management).

Tagout: The placement of a Hazardous Energy Control Program Tag on the 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, 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.

Appendix C – Facility Hazardous Energy Control Program Example

Personal Lockout (Tagout)

(1) Use Restrictions

Personal Lockout (Tagout) must NOT be used when the protection requires a Clearance (see section 12.). No Employee must work under the protection of another Employee's Lock (Tag).

NOTE: Personal Tags are not authorized for use at Plant 1.

(2) General

(a) Equipment that can be removed from service and restored to service without a Clearance must have an approved JHA that includes a procedure identifying where the Personal Lock (Tag) is to be placed.

(b) Placement and removal of all Personal Lock(s) (Tag(s)) must be:

(i) Coordinated with operations.

(ii) Approved by an Operations Supervisor.

(iii) Documented.

(iv) Personal Tags will be signed, dated, and logged in the Personal Lockout and Tagout Record at Plant 2.

(v) Personal Tags will be checked out from the Control Room and numbered, signed, dated, and logged in the Personal Lockout and Tagout Record.

(vi) Recorded.

(c) Up to four Personal Locks (Tags) may be used by an Authorized Employee on the Energy Isolaiton Points for Equipment (or system).

(d) All Personal Lock(s) (Tag(s)) must be within visual line of sight of the worksite.

(e) When a Personal Tag is used, the following requirements must apply:

(i) The Personal Tag must be attached directly to the Energy Isolation Device whenever possible.

(ii) 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.

Appendix D – Job Hazard Analysis Example

POM – XXX

JHA – Short Form

Bureau of Reclamation

JOB HAZARD ANALYSIS

Facility: Yellow Horse Powerplant — Job Hazard Analysis No. JHA 11-001

Description of Job: Air Compressor Annual PM — Page 1 of 2

Work Order/Job Plan: 416552 — Date: 1/1/2011

Activity/Phase	Potential Hazards	Recommended Actions/Controls/PPE
OPEN breaker and PLACE Personal Lock at Panel 1A, Breaker 1	480 VAC	Personal Lock, breaker locking device, multi-lock device, hardhat, gloves, eye & hearing protection
OPEN breaker and PLACE Personal Lock at Panel D1A, Breaker 2	125 VDC	Personal Lock, breaker locking device, multi lock device, hardhat, gloves, eye & hearing protection
CLOSE valve C-100 PLACE Personal Lock on inlet valve	100 psi air	Personal Lock, multi-lock device, hardhat, gloves, eye & hearing protection
CLOSE valve C-101 PLACE Personal Lock on outlet valve	100 psi air	Personal Lock, multi-lock device, hardhat, gloves, eye & hearing protection
Drain LPA receiver tank #1	Air, flying debris, loud noise	Drain slowly/hardhat, gloves, eye & hearing protection
Remove, inspect, replace parts per Annual PM	Overhead crane, pinch points, heavy equipment	Proper hand and power tools, crane signals, correct rigging techniques, proper lifting techniques/hardhat, gloves, eye & hearing protection
Residual oil and water	Slips and falls	Good housekeeping procedures, use caution/Rags, proper "pigs"
REMOVE Personal Lock at valve C-101 and OPEN valve		
REMOVE Personal Lock at valve C-100 and OPEN valve		
REMOVE Personal Lock at Panel D1A, Breaker 2 and CLOSE breaker		
REMOVE Personal Lock at Panel 1A, Breaker 1 and CLOSE breaker		

Operate equipment, inspect for oil, water, and LPA leaks, loose parts	Running equipment	Hardhat, gloves, eye & hearing protection
Personnel Participating (Sign/Date)		Personnel Participating (Sign/Date)
Comments:		Developed By/Date:
		Approved By/Date:
		Safety Professional Review/Date:

Appendix E – Forms and Tags

(1) Forms:

(a) F-HECP – Title Page

(b) F-HECP Annual Review

(c) Clearance Request

(d) Hazardous Energy Work Permit

(e) Release Under Abnormal Conditions

(f) Special Work Permit

(g) Switching Program Form

(h) FIST Revision Request

(i) Hazardous Energy Work Permit Record

(j) Personal Lock and Tag Record

(k) Special Condition Tag Record

(l) Special Work Permit Record

(2) Proficiency Checksheets:

(a) Authorized Employee,

(b) Job Supervisor,

(c) Switchman, and

(d) Operations Supervisor

(3) Tags:

(a) Clearance Tag

(b) Hot Line Tag

(c) Personal Tag

(d) Special Condition Tag

POM-210 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Hazardous Energy Control Program

_____

Documentation of Review or Revision
Date of Review or Revision: _____
Certifying Officials
Operations Manager: _____ Date: _____
Safety Manager: _____ Date: _____
Approving Official
Responsible Official: _____ Date: _____

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

POM-212 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Clearance Request

Requested By: _____ Date: _____ Time: _____

Equipment: _____

Date/Time Clearance to be ready: _____

Clearance to be issued for: _____

Duration of Clearance: _____

Estimated time to return equipment to service in an emergency: _____

WO# - PM# - TR# _____

Specific work to be performed:

Limits of the Clearance:

Special Instructions: Please attach a separate sheet.

References:

Scheduled to be removed from service: _____

Interconnected System Scheduler	Bureau Representative	Date	Time

Request Approved, subject to establishment of appropriate clearance(s) with the Operations Department

Operations Supervisor	Date	Time

The Clearance requested for the specific work described above has been established

Operations Supervisor	Date	Time

POM-214 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Release Under Abnormal Conditions

☐ Personal Lockout/Tagout

☐ Clearance

This form must be completed when a lock/tag or Clearance is removed by someone other than the Authorized Employee who placed it.

Initial each step:

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.
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).
3. _____ The Authorized Employee's Supervisor shall take responsibility for the Personal Lock or Tag (Clearance).
4. _____ If applicable, a new Job Supervisor shall request and accept an Identical Clearance prior to release of the original Clearance.
5. _____ The Authorized Employee's Supervisor shall authorize the removal (release) of the Personal Lock or Tag (Clearance).
6. _____ The Authorized Employee's Supervisor shall direct the removal of the Personal Lock or Tag.
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).

Signature:

Authorized Employee's Supervisor _____ Date _____

Authorized Employee or Clearance Holder _____ Date _____

New Clearance Holder (if applicable) _____ Date _____

Operation's Supervisor (if applicable) _____ Date _____

Note: Attach this document to the Clearance (if applicable).

Comments:

POM-213 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

HAZARDOUS ENERGY WORK PERMIT

Hazardous Energy Work Permit #: _____

Work Order/Job Plan#: _____ Circuit/equipment: _____

Location: _____

Description of work: _____

Attached Documents

☐ Job Plan

☐ Job Hazard Analysis

Justification for working energized:

_____
_____
_____
_____
_____
_____

Hazard	Control Measure
Shock	
Arc Flash	
Mechanical	
Other	

Reviewed By (print/sign/date):

Job Supervisor: _____ Print Name _____ Signature _____ Date

Safety Professional: _____ Print Name _____ Signature _____ Date

Maintenance Supervisor: _____ Print Name _____ Signature _____ Date

Operations Supervisor: _____ Print Name _____ Signature _____ Date

Facility Manager: _____ Print Name _____ Signature _____ Date

Responsible Official/Time/Date: _____ **Authorizing Official** **Expiration Date** _____

POM-215 (8-11)
Bureau of Reclamation

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
SPECIAL WORK PERMIT

RECLAMATION
Managing Water in the West

SWP# _____
CL# _____
HLO# _____

Contractor Name: _____

Purpose and Scope of Work To Be Performed: (Attach Additional Sheets If Needed)

Will this SWP require personal protective grounds? Yes ☐ No ☐

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.

Bureau Clearance or Hot Line Order Holder _____ (Print Name) _____ (Signature)

Contractor's Workplace Representative _____ (Print Name) _____ (Signature)

Bureau Worksite Representative _____ (Print Name) _____ (Signature)

This Special Work Permit issued at the worksite: Date _____ Time _____

RELEASE OF SPECIAL WORK PERMIT

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.

Contractor's Workplace Representative _____ (Print Name) _____ (Signature)

Bureau Worksite Representative _____ (Print Name) _____ (Signature)

Bureau Clearance/Hot Line Order Holder _____ (Print Name) _____ (Signature)

POM-216 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

SWITCHING PROGRAM FORM

Facility:	☐ Clearance Number: _____ ☐ Hot Line Order ☐ Switching (for Configuration Management)
Equipment:	Work to be performed:
Comments/Instructions	

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

Page **1** of **3**

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:	

POM-217 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Hazardous Energy Work Permit Record

HEWP Number	Date/Time Issued	Issued To	Equpment	Date/Time Released

POM-218 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Personal Lock and Tag Record

Date/Time Placed	Placed By	Device Location/Equipment	Date/Time Removed	Removed By

POM-219 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Special Condition Tag Record

Tag Number	Original Placement Date/Time	Placed By	Device Location/ Equipment	Remarks	Current Review Date	Reviewed By	Removal Date	Removed By

POM-220 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Special Work Permit Record

SWP Number	Date/Time Issued	Issued To	Equipment	Date/Time Released

POM-221 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Authorized Employee Proficiency Checklist

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	☐	☐
2. Explain the purpose of Configuration Management	☐	☐
3. Explain the principles of the Release Under Abnormal Conditions process	☐	☐
4. Explain the Personal Lockout/Tagout process	☐	☐
5. Clearance Process		
a) Perform the following:		
1) Obtained permission from the Job Supervisor to work under their Clearance	☐	☐
2) Reviewed the JHA	☐	☐
3) Placed their Personal Lock on the Clearance Lockbox	☐	☐
4) Verified all Energy Isolation points that establish the limits of the Clearance	☐	☐
5) Verified the placement of all Clearance Locks and Tags	☐	☐
b) Explain how to resolve discrepancies with the Clearance process	☐	☐
c) Explain your responsibilities upon completion of the work	☐	☐
6. Explain the Hazardous Energy Work Permit process	☐	☐
7. Explain the Special Work Permit process	☐	☐

Comments

Overall Grade ☐ Passed ☐ Failed

Plant Supervisor or Examiner/Title _____ Date _____

Print Name _____ Signature _____

Individual/Title _____ Date _____

Print Name _____ Signature _____

POM-222 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Job Supervisor Proficiency Checklist

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	☐	☐
2. Explain the purpose of Configuration Management	☐	☐
3. Explain the principles of the Release Under Abnormal Conditions process	☐	☐
4. Explain the Personal Lockout/Tagout process	☐	☐
5. Clearance Process		
a) Perform the following:		
1) Complete an Outage Request and submit to Operations	☐	☐
2) Complete the process of accepting a Clearance including an explanation of Working under a Clearance	☐	☐
3) Complete the process of releasing a Clearance	☐	☐
b) Explain Identical Clearances	☐	☐
c) Explain how to change the limits of a Clearance	☐	☐
6. Explain the Hot Line Order process	☐	☐
7. Explain the Hazardous Energy Work Permit process and complete a Hazardous Energy Work Permit	☐	☐
8. Explain the Special Work Permit process and complete a Special Work Permit	☐	☐

Comments

Overall Grade ☐ Passed ☐ Failed

Plant Supervisor or Examiner/Title _____ Date _____

Print Name _____ Signature _____

Individual/Title _____ Date _____

Print Name _____ Signature _____

POM-223 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Switchman Proficiency Checklist

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	☐	☐
2. Explain the purpose of Configuration Management	☐	☐
3. Explain the principles of the Release Under Abnormal Conditions process	☐	☐
4. Explain the Personal Lockout/Tagout process	☐	☐
5. Clearance Process		
a) Explain Requesting, Preparing, Working under, and Releasing a Clearance	☐	☐
b) Place a Clearance utilizing the Six Basic Steps of Switching	☐	☐
c) Explain Identical Clearances	☐	☐
d) Explain the process of performing a Clearances at Remote Sites	☐	☐
e) Explain the Hot Line Order process	☐	☐
f) Explain the Hazardous Energy Work Permit process	☐	☐
g) Explain the Special Work Permit process	☐	☐
h) Explain the Interconnected System Clearances and Hot Line Order processes	☐	☐

Comments

Overall Grade ☐ Passed ☐ Failed

Plant Supervisor or Examiner/Title _____ Date _____

Print Name _____ Signature _____

Individual/Title _____ Date _____

Print Name _____ Signature _____

POM-224 (8-11)
Bureau of Reclamation

RECLAMATION
Managing Water in the West

Operations Supervisor Proficiency Checklist

Task Successfully Completed	YES	NO
1. Explain the Job Hazard Analysis process and complete a Job Hazard Analysis	☐	☐
2. Explain the purpose of Configuration Management	☐	☐
3. Explain the principles of the Release Under Abnormal Conditions process	☐	☐
4. Explain the Personal Lockout/Tagout process	☐	☐
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	☐	☐
b) Explain the Workman's responsibilities while working under a Clearance	☐	☐
c) Utilize an Outage Request to write a Clearance	☐	☐
d) Direct the placement of a Clearance	☐	☐
1) Place a Clearance utilizing the Six Basic Steps of Switching	☐	☐
e) Issue a Clearance	☐	☐
f) Release and direct the removal of a Clearance	☐	☐
1) Remove a Clearance utilizing the Six Basic Steps of Switching	☐	☐
g) Explain Identical Clearances	☐	☐
h) Explain how to change the limits of a Clearance	☐	☐
i) Explain Clearances at Remote Sites	☐	☐
6. Explain the Hot Line Order process	☐	☐
7. Explain the Hazardous Energy Work Permit process and complete a Hazardous Energy Work Permit	☐	☐
8. Explain the Special Work Permit process and complete a Special Work Permit	☐	☐
9. Explain the Interconnected System Clearances and Hot Line Order processes and perform a "mock" procedure	☐	☐

Comments

Overall Grade ☐ Passed ☐ Failed

Plant Supervisor or Examiner/Title _____ Date _____

Print Name _____ Signature _____

Individual/Title _____ Date _____

Print Name _____ Signature _____

Note: Tags are not to scale.

Title: Clearance Tag, POM-137

Note: Tags are not to scale.

FRONT **BACK**

Title: Hot Line Tag, POM-135

Note: Tags are not to scale.

FRONT **BACK**

Title: Personal Tag, POM-166

Note: Tags are not to scale.

Title: Special Condition Tag, POM-138