



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

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Office Memorandum
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Safety and Occupational Health Office
Safe Clearance Program for the Control of Hazardous Energy
(Power Generating Facilities)

1. PURPOSE. This U.S. Army Corps of Engineers (Corps), Northwestern Division, Walla Walla District (District), Office Memorandum (NWWOM), prescribes policies for the Safe Clearance Program for the Control of Hazardous Energy at power generating facilities. These policies are intended to:

a. Safeguard personnel whose operating, maintenance, construction, testing, or research duties require them to work on or near equipment in which the unexpected energizing, startup, or release of any form of hazardous energy could cause personal injury or property damage.

b. Prevent equipment damage, which could result from the release of hazardous energy or from the release of content, (*i.e.*, lubricating oil, control fluids, hydraulic oil, *etc.*).

c. Prevent release of hazardous or potentially hazardous substances to the environment.

2. APPLICABILITY. The policies and procedures prescribed in this NWWOM are applicable to all employees of the District. It meets minimum lockout/tagout requirements for general industry and construction activities.

3. REFERENCES.

a. Title 29 Code of Federal Regulation (CFR) Part 1910.147, *The Control of Hazardous Energy (lockout/tagout)*.

b. 29 CFR Part 1910.333, *Selection and Use of Work Practices*.

This NWWOM supercedes NWWOM 385-1-20, 11 July 2006.

- c. 29 CFR Part 1910.269, *Electric Power Generation, Transmission, and Distribution*.
- d. Engineer Regulation (ER) 385-1-31, *Safety and Occupational Health - The Control of Hazardous Energy* (see appendix A).
- e. Engineer Manual (EM) 385-1-1, *Corps of Engineer Safety and Health Requirements Manual*.
- f. American National Standards Institute (ANSI) C2, *National Electrical Safety Code*.
- g. Occupational Safety and Health Administration (OSHA) Instruction STD 1-7.3, *The Control of Hazardous Energy (Lockout/Tagout) - Inspection Procedures and Interpretive Guidance*.

4. DEFINITIONS. Refer to Appendix B.

5. POLICY.

a. Equipment shall be covered by a Safe Clearance and all energy sources shall be controlled before performing service or maintenance on equipment. In circumstances requiring Safe Clearances, personnel and resources shall not be considered protected until all Hazardous Energy Control Procedures (HECP) and special instructions have been completed.

b. Government or contractor personnel shall not be allowed to work on any equipment subject to the Safe Clearance program until completion of the following steps:

(1) The HECP and special instructions have been completed.

(2) The equipment is placed under a Safe Clearance issued to an Authorized Individual.

(3) After the Safe Clearance is inspected by and issued to the authorized Corps representative, an identical Safe Clearance shall be issued to the Authorized Individual (contractor, or off site personnel) in charge of the work.

c. When isolation points are located in uncontrolled public access areas, locks shall be attached to the isolation devices in addition to Safe Clearance Tags.

d. Computer software, or any other type of programming, shall not be used to create isolation points.

e. Tagouts may be used instead of lockouts (*i.e.*, locks) on energy isolation points not accessible to the public.

(1) An isolation point tagged with a Safe Clearance tag shall be treated as being a locked point and shall never be operated with the Safe Clearance tag attached.

(2) The Safe Clearance tag shall be attached to the same location as the lockout device. If this is not possible then the tag is attached as close to the device as safety shall allow and in a position that shall be immediately obvious to anyone attempting to operate the device.

(3) All tags shall be posted by the Issuing Authority, or the qualified designated alternate.

(4) A lockout device must always be accompanied by a Safe Clearance Tag (Danger Tag).

(5) Whenever tagouts are used instead of lockouts on electrical circuits, additional measures must be taken to provide added safety. This consists of taking steps to ensure the circuit cannot be energized by the closing of a single tagged switch or by taking measures that prevent the accidental closing of the disconnecting means. This can consist of any of the following:

- Opening both the energy isolating circuit breaker and its associated disconnect.
- Removal of a circuit element (*i.e.*, a fuse).
- Racking out or removing the circuit breaker.
- Opening and applying a tagout to the circuit breaker (energy isolating device), opening the associated control switch or circuit, and applying a tagout device to it.
- Placing a blocking mechanism over the operating handle of a disconnecting means so that the handle is blocked from closing the circuit.
- Grounding the circuit upon which work is to be performed.

(6) Tagouts may be used because:

- All personnel are trained to regard a Safe Clearance tag (Danger Tag) with the same respect they would give a lock.
- All personnel are instructed that tagouts are being used in place of lockouts and are instructed about the limitations of tagouts.
- The technique of "do-and-check" provides an additional level of safety by having a second person verify correct positioning of the energy isolating device before personnel begin work.

- Project security measures limit or prevent untrained personnel from gaining access to tagged out devices.

f. The equipment listed in appendix C, Equipment Authorized for Switching Permit, may be operated, or removed from service under the Switching Permit provisions of this hazardous energy control program.

g. The HECP shall be made available to all personnel, including contractors, or Government personnel from off the site, having the potential for exposure to hazardous energy.

h. Safe Clearance violations are taken very seriously. Violations can result in injury, damage to equipment, or loss of life. Violators of this program may require training and retesting.

i. The Operations Manager shall ensure alleged violations are investigated.

j. Diving operations conducted under the direction of a Corps Diving Inspector on a project where project operations or maintenance may pose a risk to diving crew personnel shall be protected by a Safe Clearance procedure. Both the Government dive inspector and the dive crew supervisor shall be issued a Safe Clearance.

k. A Corps Quality Assurance Representative (QAR), where qualified and authorized, may be issued a Safe Clearance to protect themselves, persons for whom they may be directly responsible and government property. The QAR shall not receive a Safe Clearance for a contractor.

6. RESPONSIBILITIES.

a. The Operations Manager is the Responsible Official and has overall responsibility for the Project Hazardous Energy Control Program.

b. The Operations Manager designates, in writing, the Issuing Authority and Authorized Individuals.

(1) If a person requests a Safe Clearance and is not listed as an Authorized Individual in appendix D, the Operations Manager may elect to grant temporary written authorization and shall be given to the Issuing Authority.

(2) The Operations Manager or designee is responsible for all administrative aspects of the Hazardous Energy Control Program. This includes:

- Training and testing.
- Annual review and record keeping.
- Overseeing Safe Clearance Committee activities.

- Drafting proposed revisions to the Hazardous Energy Control Program.
- Monitoring program compliance.
- The Operations Manager, or his designee, make changes to the list of Authorized Individuals and Issuing Authorities.
- Authorize mission dependent systems and equipment for removal from service.
- Ensuring maintenance and retention of all Safe Clearance, Switching Permit, and Caution Order records.
- Preparing or directing the preparation of written procedures for clearing out equipment and placement of tags and locks.
- Maintaining a file or manual of written procedures and making them available to all authorized persons.
- Whenever new or modified equipment or changes in operating procedures or practices make it necessary, promptly prepare HECP.
- Coordinating HECP between project operating and maintenance personnel, resource personnel, and contractors or other affected off-site personnel.
- Ensuring contractors and other affected government or non-government off-site personnel understand and comply with the provisions of the HECP.
- Investigating violations. Take corrective action as necessary.

c. The Issuing Authority (the Operator in Charge of the Shift), as the System Operator exercises complete control over hazardous energy sources that endanger personnel that are maintaining or servicing machinery or equipment associated with the multiple purpose hydroelectric facility and shall:

(1) Review requests for Safe Clearances and Switching Orders, consult with the Safe Clearance requester, and ensure that adequate protection is provided to personnel and equipment for the work to be performed.

(2) Approve requests submitted on the Safe Clearance Form (Eng. Form 1927- R) and generate a copy for record keeping (see appendix E for example).

(3) Ensure the preparation of the Safe Clearance Order Form and Safe Clearance tags for each Safe Clearance requested. This duty may be delegated to the Journeyman Operator or Lap Operator.

(4) Verify that the requester is authorized to be issued a Safe Clearance and provide a copy.

(5) Make all necessary arrangements for interruption of services, including notification of customers.

(6) Coordinate with agencies and other entities to ensure isolation of systems that are to be cleared, and confirm the following with the Authorized Individual:

- All energy-isolating devices are positioned exactly as specified by the Safe Clearance and tagged and locked if necessary.
- Tagouts and locks (if locks are used) are affixed to hold the energy-isolating device in the safe position. See paragraphs 5.c, 7.x, and y.
- Equipment under Safe Clearance is safe for the work to be performed.

(7) Equipment is ready for service after work has been completed and all Authorized Individuals have released his/her Safe Clearance.

(8) Maintain awareness of equipment condition and status during the Safe Clearance.

(9) Record all Safe Clearance operations as required in paragraphs 8 and 9. This includes:

- Request.
- Issue.
- Release.
- Attachment or removal of protective grounds.
- Temporary lifts.
- Inspections.
- Changes in status or position.
- Violations.

(10) Assist the Authorized Individual, as needed.

(11) Provide operating-level assistance and coordination to ensure all parties follow the provisions of the HECP.

(12) Keep lockout/tagout records on file for a minimum of 2 years.

d. The Authorized Individual (Clearance Holder) shall:

(1) Request Safe Clearances using the Safe Clearance Order Form (ENG Form 1927-R).

(2) Review the Safe Clearance request with the Issuing Authority to ensure it provides adequate protection for the work to be done.

- (3) Verify the correct positioning of all energy isolation devices and the correct placement of lockout and tagout devices and attest by writing their initials in ink on the tags.
- (4) Verify installation of all required physical barriers and protective grounds, being sure to place the grounds after the Safe Clearance is issued, but before the work begins.
- (5) Test to verify isolation of the system.
- (6) Verify hazardous energy is relieved, bled off, or otherwise released in a safe manner whenever there is a possibility of re-accumulation.
- (7) Assume responsibility for the system under Safe Clearance until:
 - All work is done.
 - All personnel, tools, and equipment are in the clear.
 - The Safe Clearance is released to the Issuing Authority.
- (8) Remove all protective grounds prior to releasing the Safe Clearance.
- (9) Keep the Issuing Authority informed of the status of the work.
- (10) Coordinate with other Clearance Holders and Affected Individuals as required.
- (11) Obtain permission from the Issuing Authority before any change to the status of the Safe Clearance.
- (12) Be responsible for the application and removal of personal locks, when used.
- (13) Assume full responsibility for safeguarding of the Master Tag and ensure all Affected Individuals sign on and off the Safe Clearance, legibly, and in ink.
- (14) Report to the Issuing Authority any circumstances not meeting the requirements of the HECP.
- (15) Transfer the Safe Clearance to another Authorized Individual when necessary and approved by the Responsible Official or designated alternate.
- (16) Prior to releasing the Safe Clearance, verify the equipment is ready for service, all personnel and tools are clear of the equipment to be energized, and all personnel are signed off the Master Tag.

e. All Affected Personnel shall:

- Verify prior to signing on the Master Tag that the Safe Clearance provides adequate protection for the work to be performed.
- Report to the Issuing Authority any circumstances not meeting the requirements of the HECP.
- Obtain permission from the Clearance Holder prior to performing work under a Safe Clearance.
- Sign on and off (in ink) the Master Tag.
- Not operate any locked out or tagged out device.
- Maintain awareness of the HECP and Safe Clearance status.

f. Vendors and visitors entering the affected area of a Safe Clearance.

(1) All vendors and visitors shall be escorted at all times by the Clearance Holder, an Authorized Individual, or an escort appointed by the Operations Manager.

(2) Escorts, Vendors, and Visitors shall sign on/off the Master Tag whenever they enter/exit an area affected by a Safe Clearance.

g. The Safe Clearance committee shall carry out the functions outlined in Paragraph 10.0.

h. All personnel shall demonstrate a spirit of cooperation and shared responsibility for the implementation of the HECP. Any potentially unsafe conditions shall be reported to the Issuing Authority.

7. HAZARDOUS ENERGY CONTROL PROCEDURES.

a. Before any task is performed, the worker shall determine whether the provisions of paragraphs 5.a or b require a Safe Clearance. If one is required, personnel and equipment shall not be considered protected until all applicable measures of the HECP are completed.

b. The switching order steps of the Safe Clearance shall be written in the sequence that provides the greatest measure of safety.

c. Only qualified personnel (Issuing Authority or designee) shall be permitted to perform the switching, valving, and tagging steps of the Safe Clearance.

d. At remote sites, the Authorized Individual may perform all switching, valving, and lockout/tagout operations when authorized by the Issuing Authority. When possible, a second Authorized Individual should verify the Safe Clearance points.

e. When possible, requests for Safe Clearances should be made 24 hours in advance to give the Issuing Authority time to prepare. Professional consideration on behalf of both the requester and the Issuing Authority shall be observed.

f. Personal locks shall not be shared or loaned between individuals. All keys to personal locks must remain under the control of the person to whom the locks are issued. Master keys shall not be allowed.

g. The following entries in the Station Log shall be in red ink:

- (1) Request.
- (2) Issue.
- (3) Attachment of protective grounds.
- (4) Temporary Lifts.
- (5) Equipment testing.
- (6) Violations.
- (7) Inspections.
- (8) Changes in status or position.

h. The following entries shall be in green ink:

- (1) Clearance release.
- (2) Removal of grounds.
- (3) Release of a Clearance point.

i. Tagout devices (Danger Tags) shall be standardized as follows:

- (1) They must display the phrase "Danger-Do Not Operate."
- (2) The following additional information shall be placed legibly on each tag:
 - Clearance number.
 - Tag number.
 - Name of the person who positioned the device being tagged, including their initials, date, and time.
 - The Authorized Individual to whom the Safe Clearance shall be issued including their initials when the device is checked.

- The hazardous energy control device, or other equipment, being held.
- The position the hazardous energy control device, or other equipment, should be in OPEN, CLOSED, ON, OFF, *etc.*

j. Computer-generated labels containing the required information may be attached.

k. The Safe Clearance tags may be reused by removing the old label or by applying new labels on top of the old.

l. Writing on the tags shall be legible and understandable.

m. Printed (text) on the tag shall be done with materials that remain legible in the environment to which it is exposed, or the tag shall be suitably covered.

n. Tags shall remain conspicuous.

o. Tags shall be attached with non-reusable cable ties capable of withstanding a 50-pound pull. Ultra Violet light resistant cable ties shall be used when the tag is exposed to sunlight. Tags shall also be made of a material which shall withstand the environmental conditions encountered in the workspace.

p. Written standard HECP, including switching orders, shall be developed at each work site for all equipment supplied with multiple sources of hazardous energy. This requirement does not exclude the use of Switching Permits if applicable to a work situation.

q. The Operations Manager or designated alternate shall grant approval for the removal from service of any equipment that may affect the mission of the project.

r. Whenever possible, in-person verbal communications shall be used for the following hazardous energy control operations:

- (1) Requesting Clearances.
- (2) Releasing Clearances.
- (3) Installing and removing grounds.
- (4) Requests for temporary removal and the reinstallation of lockout or tagout devices.
- (5) Permanent changes to the lineup or position of locked out or tagged out devices.

s. When in-person communications are not possible, other means in order of preference are:

(1) Telephone.

(2) Radio.

t. All verbal communications shall be repeated back to avoid misunderstanding. This shall include the Clearance number, equipment under Safe Clearance, changes to be made, or other specific information to avoid confusion.

u. Before beginning work, verify stored or residual hazardous energy is relieved, bled off, disconnected, or restrained by:

(1) Testing electrical circuits.

(2) Bleeding off pressure and leaving appropriate drain or vent valves open, if provided.

v. Because of the possible leakage through energy isolation devices, especially valves and capacitors, the Authorized Individual shall check periodically for the re-accumulation of hazardous energy or loss of content.

w. All precautions must be taken against backfeed or double-ended feed.

x. Tagout and lockout devices should be attached in a manner that holds the hazardous energy isolation device or Clearance point in the safe position specified by the procedure. Use one tie-wrap per tag.

y. Tagout and lockout devices should be attached in a manner that prevents inadvertent operation. Only one key shall exist for each lock. The extra key shall be disposed of or kept in a separate locked safe to be accessed only by the Operations Manager. No master key shall exist.

z. When prepared, all Clearances shall have a Master Tag (see appendix E) attached to support the requirements for Changes of Status and Group Clearances.

8. SAFE CLEARANCE PROCEDURES.

a. Safe Clearance Requests.

(1) The Authorized Individual requesting the Clearance shall submit a request and coordinate with the Issuing Authority to determine the following information:

- A description of the work to be performed under the Clearance.

- Determine the correct energy isolation points needed to perform the work safely.
- Physical barriers, protective grounds, piping blanks, or bulkheads that shall be used, including locations.
- Determine the procedure and method of testing for stored energy if applicable.
- The date and time the Clearance shall be required.
- The estimated length of time the system or equipment shall be out of service and the time to return the system or equipment to service in an emergency.

(2) The Issuing Authority receiving the Safe Clearance request shall:

- Work with the Authorized Individual to verify that the Clearance request provides adequate protection of personnel and equipment for the work to be performed.
- Make all necessary arrangements for removing the equipment from service.
- Prepare the Safe Clearance Order Form, Master Tag, and Safe Clearance Tags (see appendix E).
- List the switching order steps that provide the greatest measure of safety on the Safe Clearance Order Form.
- Ensure the testing procedures for stored energy are addressed.
- Ensure the clearance requester is aware of the type, magnitude, and hazard of the energy pertaining to the Clearance.

b. Isolation Procedures (Hanging the Safe Clearance). The Issuing Authority or designated alternate shall:

(1) Ensure the equipment is shut down in accordance with established operating practices.

(2) Position equipment controls, valves, switches, disconnects, breakers, *etc.* in the order listed on the Safe Clearance Order Form.

(3) Bleed off or otherwise render safe all stored or residual energy.

(4) Place all Clearance Tags and lockout devices (if used).

(5) After proper placement of each Safe Clearance tag, initial, and record time and date in the space provided.

(6) Initial the Safe Clearance Order Form next to the Clearance Tag number for each tag hung.

(7) Notify the Authorized Individual that Hazardous Energy Control procedures have been completed and provide a copy of the Safe Clearance Order Form to the Authorized Individual.

c. Accepting and Issuing the Safe Clearance.

(1) The Authorized Individual shall:

- Use the provided copy of the Safe Clearance Order Form to check each isolation device for correct positioning.
- Verify each Safe Clearance Tag for correct placement.
- Apply lock if applicable.
- Verify that all stored or residual energy has been bled off or otherwise rendered safe.
- Initial all Safe Clearance Tags in the space provided.
- Initial the copy of the Safe Clearance Order Form next to the Clearance Tag number for each tag hung, which is attached to the Master Tag.
- After the above steps have been completed, sign the Safe Clearance Order Form in the Control Room to accept the Clearance. Upon acceptance, the Clearance Holder becomes fully responsible for the system or equipment covered by the Clearance.
- The Master Tag shall be maintained at the worksite or returned to the Issuing Authority at the end of each shift.

(2) The Issuing Authority shall:

- Issue the Clearance to the Authorized Individual and document this by making the required entries on the Safe Clearance Order Form.
- Log the issuing of the Clearance in the Station Log Book in red ink.
- Provide copies of the Master Tag. These forms shall be numbered sequentially and documented on the Safe Clearance Order Form.
- Attach the Master Tag forms to a copy of the Safe Clearance Order Form to support the requirements of a Group Clearance.

d. Temporary Protective Grounds.

(1) Installing Grounds. If temporary protective grounds are needed, the following steps shall be completed within the timeframe of a single shift:

- The circuit to be grounded shall be placed under Clearance, issued by the Issuing Authority, and accepted by the Clearance Holder.
- All protective grounds shall be hung by or under the direct supervision of a Qualified Electrical Worker.

- The Issuing Authority shall authorize the hanging of protective grounds and shall record this authorization for the grounds in the Station Log Book in red ink.
- The Qualified Electrical Worker who hangs the temporary grounds shall sign on to the Master Tag.
- The Qualified Electrical Worker shall install the grounds in accordance with accepted industry standards.
- After the grounds are installed, the Qualified Electrical Worker shall sign off the Master Tag and notify the Issuing Authority and the Clearance Holder.
- The Issuing Authority shall record the installation of the grounds in the Station Log Book in red ink.
- The Issuing Authority shall ensure a completed Safe Clearance Tag is attached to the ground in a conspicuous location.
- The Clearance Holder shall initial the Safe Clearance Tag and the tag entry on the copy of the Safe Clearance Order Form attached to the Master Tag.
- The Issuing Authority shall record the addition of ground Safe Clearance Tags in the Station Log Book in red ink.
- The Issuing Authority shall verify or record on the Master Tag, the tag number, date, and time for the grounds.
- The Clearance Holder shall verify or record this change of status on the Master Tag.

(2) Removing Grounds. When temporary protective grounds are to be removed, the following steps shall be completed within the timeframe of a single shift:

- All affected persons shall sign off the Master Tag.
- The Clearance Holder shall request the release of ground tags and provide the Issuing Authority the Clearance and tag numbers.
- The Issuing Authority shall ensure that all released ground tags are removed.
- The Issuing Authority shall verify or record the change of status on the Master Tag, including tag numbers, date, and time of release.
- The Issuing Authority shall record the release of all ground tags on the Safe Clearance Order Form and make a corresponding entry in the Station Log Book in green ink.
- The Clearance holder shall verify or record the entry on the Master Tag and update the attached copy of the Safe Clearance Order Form.
- The Qualified Electrical Worker removing the grounds shall sign on to the Master Tag.
- All protective grounds are to be removed by or under the direct supervision of a Qualified Electrical Worker in accordance with accepted industry standards.

- The Qualified Electrical Worker shall report to the Issuing Authority and the Clearance Holder when the grounds are removed.
- The Issuing Authority shall record the removal of the grounds in the Station Log Book in green ink.

e. Adding Safe Clearance Tags (isolation points) to a Clearance.

(1) Changes to the status of a Clearance shall be coordinated between all affected Clearance Holders and the Issuing Authority. The following are the minimum actions to be taken:

(a) The Clearance Holder shall:

- Ensure all Affected Individuals have signed off the Master Tag.
- Make a request to the Issuing Authority to add additional energy isolation points and Safe Clearance Tags to their Clearance.

(b) The Issuing Authority shall:

- Ensure that all Affected Individuals are signed off the Master Tag.
- Prepare the additional Safe Clearance Tags and add the energy isolation points to the Safe Clearance Order Form (if they already exist on the form, enter the date and time they were hung in red ink).
- Ensure that the energy isolation devices are correctly positioned and the Safe Clearance Tags are properly hung and initialed.
- Record and initial the change of status on the Master Tag.
- Record the change of status in the Station Log Book in red ink.

(c) The Clearance Holder shall:

- Accept the additions to the Clearance by initialing each added isolation point on the Safe Clearance Order Form.
- Verify the position of the energy isolation and Safe Clearance Tags by initialing the new tags.
- Verify and initial the change of status on the Master Tag.
- Update and initial the copy of the Safe Clearance Order Form (attached to the Master Tag) to reflect the added energy isolation points.

f. Release of a Safe Clearance Tag.

(1) Safe Clearance Tags can be released individually without releasing the entire Clearance.

(2) Any change to the status of a Clearance shall be coordinated between all affected Clearance Holders and the Issuing Authority.

(3) The Clearance Holder shall:

- Inspect the equipment to ensure it is properly reassembled, temporary grounds have been removed, and all tools and equipment have been cleared from the area.
- Ensure all Affected Personnel have signed off the Master Tag.
- Request the Issuing Authority release the desired energy isolation points listed on their Safe Clearance Order Form.

(4) The Issuing Authority shall:

- Ensure that Affected Personnel have signed off the Master Tag.
- Ensure the released Safe Clearance Tags are removed and that isolation devices are positioned as required.
- Record and initial the change of status on the Master Tag.
- Record the release of the Safe Clearance Tags on the Safe Clearance Order Form and make a corresponding entry in the Station Log Book in green ink.

(5) The Clearance Holder shall:

- Initial the entries on the Safe Clearance Order Form in the control room.
- Verify and initial the change of status on the Master Tag.
- Update the copy of the Safe Clearance Order Form (attached to the Master Tag) to reflect the removed energy isolation points.

g. Temporary Lifts of Safe Clearance Tags.

(1) Temporary Lifts shall be of short duration. Temporary Lifts may be used to reposition or test operate equipment covered under a Clearance. The level of exposure of hazards to employees is high during the transition periods (changing from a de-energized condition to an energized condition until the system is placed back under Safe Clearance control) of the temporary lift. This exposure requires that a detailed sequence of steps are followed in order to ensure all tasks are safely accomplished.

(2) All changes to the status of a Clearance shall be coordinated between all affected Clearance Holders and the Issuing Authority.

- (3) The Clearance Holder shall:
 - Ensure all Affected Personnel have signed off the Master Tag.
 - Notify and coordinate the Temporary Lift with any other Authorized Individuals who have a Clearance on the same equipment or related systems.
 - Ensure all tools and equipment are in the clear and affected equipment has been properly reassembled.
 - Advise the Issuing Authority on the status of the equipment and request the removal of the appropriate Safe Clearance Tags.
- (4) The Issuing Authority shall:
 - Verify that all Affected Personnel have signed off the Master Tag.
 - Record and initial the change of status on the Master Tag.
- (5) The Clearance Holder shall:
 - Verify and initial the change of status on the Master Tag.
- (6) The Issuing Authority shall:
 - Ensure the removal of the appropriate Safe Clearance Tags and reposition the energy isolation devices. After which the Affected Personnel may sign on to the Master Tag for work to be done under the Temporary Lift.
 - Record the Temporary Lift in the Station Log Book in red ink.
- (7) When the temporary operation is completed, the Clearance Holder shall request one of the following:
 - The release of the temporarily lifted tag(s) using paragraph f of this section.
 - The release of the Clearance using paragraph h of this section.
 - The re-hanging of the temporarily lifted tag(s).
- (8) If the tag(s) are to be re-hung, ensure all Affected Personnel, including other affected Clearance Holders, are notified and signed off the Master Tag and request the Issuing Authority to re-hang the lifted tag(s).
- (9) The Issuing Authority shall:
 - Verify that all Affected Personnel have signed off the Master Tag.
 - Verify all hazardous energy is relieved, bled off, or made safe.

- Ensure all hazardous energy isolation devices are positioned as specified on the Safe Clearance Order Form and Safe Clearance Tags re-hung.

(10) The Clearance Holder shall:

- Verify that the hazardous energy isolation points are restored to the correct position and lockout/tagout devices are properly applied.

(11) The Issuing Authority shall:

- Record and initial the change on the Master Tag.
- Record the change of status in the Station Log Book in red ink.

(12) The Clearance Holder shall:

- Verify and initial the change on the Master Tag.

h. Releasing a Clearance.

(1) Upon completion of the work, the Clearance Holder shall:

- Verify all equipment is properly reassembled.
- Ensure all Affected Personnel have signed off the Master Tag.
- Verify all temporary grounds have been removed.
- Verify all tools and equipment have been cleared from the area.
- Ensure all Affected Personnel have been notified that the system or equipment shall be energized or otherwise returned to service.
- Return the Master Tag and attached sheets to the Issuing Authority.
- The status of the equipment has been reported to the Issuing Authority.
- Request the release of the Clearance and sign the Safe Clearance Order Form.

(2) The Issuing Authority shall:

- Record the release on the Safe Clearance Order Form.
- Ensure all Affected Personnel have signed off the Master Tag
- Ensure the removal of the tagout and lockout devices and return the equipment to service.
- Sign the Safe Clearance Order Form to identify when the Safe Clearance Tags have been removed.
- File the Master Tag and attached sheets with the official Safe Clearance Order Form in the Released Clearances Folder.

- Record the Clearance release in the Station Log Book in green ink.
- Inspect and test-operate mission-dependent equipment to verify proper operation.
- Make any required notifications, (*i.e.*, to Bonneville Power Administration dispatchers and schedulers, Reservoir Control Center, *etc.*)

i. Transferring Safe Clearances. If it should become necessary to transfer a Clearance to a different Authorized Individual, first a new Clearance shall be issued, and then the previously held Clearance shall be released.

j. Multi-Shift Safe Clearances.

(1) Whenever work requiring a Clearance must continue across subsequent shifts, a single Clearance may be issued to all persons holding a specific job title (*i.e.*, shift foreman, shift supervisor, shift lead person, *etc.*). This authorization only applies to Authorized Individuals specifically named on the Safe Clearance Order form.

(2) All rules and procedures described in this policy shall be adhered to with the following exceptions:

- The first shift supervisor must check the hazardous energy control points and lockout/tagout devices for proper placement and initial the Safe Clearance Tags in the space provided. He/She shall accept the Clearance by signing the Safe Clearance Order Form.
- The Issuing Authority shall make the required entries on the Safe Clearance Order Form and record the Clearance issued in the Station Log Book.
- Subsequent shift supervisors must also check and initial the Safe Clearance Tags and sign the Safe Clearance Order form, denoting acceptance of the Clearance.
- The Issuing Authority shall enter this acceptance in the Station Log Book.
- A Master Tag shall be issued to the Shift Supervisors. All Affected Individuals shall be required to sign on/off at the beginning/end of each shift.
- At shift change, the current Shift Supervisor shall communicate all conditions of the Clearance and the work to the on-coming Shift Supervisor, turn over the Master Tag, and notify the Issuing Authority to the change of Supervisor. The Issuing Authority shall log the change of Supervisor in the Station Log Book. If there is a break in successive shifts, this communication shall be made in writing and attached to the Master Tag and the Master Tag shall be returned to the Control Room.

k. Release of a Safe Clearance when the Clearance Holder is absent but can be contacted. In the event the Clearance Holder is absent from work and the delay in return to service of the equipment negatively impacts the mission of the project, the Clearance can be released by following these steps:

- (1) The immediate supervisor and the Issuing Authority contact the Clearance Holder jointly, apprising them of the need to release the Clearance.
- (2) The Clearance Holder requests their Clearance be released. All communications are repeated back.
- (3) The Issuing Authority records this request in the Station Log Book.
- (4) Both the Supervisor and the Issuing Authority or designated alternate shall review the Master Tag to determine Affected Personnel, inspect the equipment, ensuring all equipment is properly assembled, all tools and equipment have been cleared from the area, and all Affected Personnel have been notified that the equipment shall be energized or otherwise returned to service.
- (5) The Issuing Authority enters the verbal release on the Safe Clearance Order Form, and then follows normal procedures in removing the Clearance and returning the equipment to service.

l. Release of a Safe Clearance when the Clearance Holder is absent and cannot be contacted. In the event the Clearance Holder is absent from work and cannot be contacted by any means, and the delay in return to service of the equipment negatively impacts the mission of the project, the Clearance can be released by following these steps:

- (1) The Clearance Holder's immediate Supervisor must consult with and obtain approval from the Operations Manager and Issuing Authority to have the Clearance released.
- (2) The Supervisor informs the Issuing Authority of the need to release the Clearance.
- (3) Both the Supervisor and the Issuing Authority or designated alternate shall review the Master Tag, inspect the equipment, ensuring all equipment is properly assembled, all tools and equipment have been cleared from the area, and all Affected Employees have been notified that the equipment shall be energized or otherwise returned to service.
- (4) The Supervisor notifies the Operations Manager of the status of the equipment.

(5) The Operations Manager provides written authorization to the Issuing Authority to release the Clearance. The authorization shall include the Clearance number, date, time, and reason for the abnormal operation.

(6) The Issuing Authority attaches this Authorization to the Safe Clearance Order Form, enters "See Attached" in the release section of the form, makes corresponding entries in the Station Log Book with the Operations Manager's signature, then follows normal procedures in removing the Clearance and returning the equipment to service.

(7) The Supervisor shall inform the Authorized Individual, immediately upon his/her return to work, that their Clearance has been released.

m. Safe Clearance Status Changes in the absence of an Affected Person who can be contacted. If a status change is required on a Clearance during the absence of an Affected Person who is signed on the Master Tag, the following steps shall be taken:

(1) The Clearance Holder shall notify his/her immediate supervisor of the need for a status change and the absence of an Affected Person.

(2) The Supervisor and the Issuing Authority shall jointly contact the Affected Person and inform him/her of the need for a status change. All communications are repeated back.

(3) The Affected Person requests that he/she be signed off the Master Tag.

(4) The Issuing Authority enters this request in the Station Log Book and signs the Affected Person off the Master Tag, noting this was a verbal request.

n. Safe Clearance Status changes in the absence of an Affected Person who cannot be contacted. If a status change is required on a Clearance during the absence of an Affected Person who is signed on the Master Tag and cannot be contacted, the following steps shall be taken:

(1) The Clearance Holder shall notify the Affected Person's immediate supervisor of the need for a status change in the absence of an Affected Person.

(2) The Supervisor shall provide the Issuing Authority with a written and signed authorization that includes the Affected Person's name, the Clearance number, the date, and time they are to be signed off the Master Tag.

(3) The Issuing Authority shall attach the authorization to the Master Tag, sign the Affected Person off the Master Tag, noting the attached authorization, and make a corresponding entry in the Station Log Book.

(4) The Issuing Authority shall notify the Clearance Holder that the Affected Person has been signed off the Clearance.

(5) The immediate Supervisor shall ensure the Affected Person is notified that he/she was signed off the Master Tag immediately upon their return to work.

o. Loss of a Master Tag. If a Clearance Holder loses a Master Tag, the following steps shall be taken:

(1) The Clearance Holder shall immediately contact their supervisor, the Issuing Authority, and all Affected Personnel.

(2) The Clearance Holder's supervisor shall inform other Crew Supervisors. They shall stop all work covered by the Clearance and ensure that all Affected Personnel are aware of the situation.

(3) The Clearance Holder shall request a new Master Tag from the Issuing Authority.

(4) The Issuing Authority shall record the loss of the original Master Tag on the Safe Clearance Order Form and in the Station Log Book in red ink.

(5) The Issuing Authority shall issue a new Master Tag to the Clearance Holder with the current status noted. The current status shall be retrieved from the Station Log Book and Safe Clearance Order Form.

(6) No work shall be performed under the Clearance until the new Master Tag has been issued and all Affected Personnel have signed on the new Master Tag.

p. Group Safe Clearances.

(1) When servicing or maintenance is performed by a crew, craft, department, or other group of personnel, they shall use a Group Safe Clearance procedure, which affords them a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

(2) All provisions of paragraph 8, Safe Clearance Procedures, shall be followed.

(3) All Master Tag sheets shall be numbered sequentially and noted on the Safe Clearance Order Form.

(4) The Clearance Holder shall ensure that each person working under a Group Safe Clearance signs on the Master Tag, legibly and in ink, to verify that they fully comprehend the details of the job, the energy isolation points, and the lockout or tagout devices installed.

(5) No changes shall be made to any isolation points until all personnel who are signed on to the Master Tag have been notified and are clear of any possible danger resulting from the change. Personnel working under the Group Safe Clearance shall sign off the Master Tag prior to making any changes and sign back on the Master Tag, verifying that they are aware of the changes, before returning to work under the Clearance.

q. Safe Clearances at Remote Sites.

(1) At unattended, automatic, or remote controlled stations, the Authorized Individual is responsible for the proper clearing, tagging, and locking of equipment in accordance with the provisions of this policy.

(2) All required Station Log Book entries shall be made by the Issuing Authority.

(3) All necessary switching and clearing operations shall be performed by the Clearance Holder at remote sites.

(4) In addition to the responsibilities assigned by paragraph 6 e., the Authorized Individual may be responsible for the following at remote sites:

- Making all necessary arrangements for interruption of services, including notification of customers.
- Coordinating with agencies and other entities to ensure isolation of systems that are to be cleared.
- Ensuring all energy-isolating devices are positioned exactly as specified by the Safe Clearance form and ensuring all points are locked and tagged accordingly.
- Ensuring tagouts or locks (if locks are used) shall be affixed to hold the energy isolating device in the safe position, whenever possible.
- Ensuring the equipment under Clearance is safe for the work to be performed.
- Ensuring equipment is ready for service after work has been completed.
- Ensuring operation of equipment under Clearance is coordinated with affected agencies, customers, or other entities.

(5) Upon completion of the work, the Authorized Individual shall inform the Issuing Authority.

(6) As soon as practicable the Authorized Individual shall return the completed Safe Clearance Order Form to the Issuing Authority.

r. Switching Permits.

(1) A Switching Permit provides for the restricted authorization for designated personnel to take designated equipment out of service for limited maintenance or test operation.

(2) Equipment listed under Appendix C may be operated or removed from service for test or maintenance purposes without a Safe Clearance by following the provisions of this section.

(3) Switching Permits shall be issued only to authorized project personnel listed in Appendix D.

(4) Switching Permits shall be issued only on circuits of 480 volts or lower.

(5) Equipment designated for Switching Permit use must be:

- Easily isolated such that the Authorized Individual can exercise close control over the isolating points.
- Not in the main stream that would affect the facility mission.
- Maintained under a Switching Permit only during one maintenance work shift.

(6) The Switching Permit tag shall consist of a red plastic tag containing the name of the permit holder and the phrases, "Switching Permit - DO NOT OPERATE - DO NOT REMOVE.

(7) A Switching Permit tag shall be attached in the same manner and treated with the same respect as a Safe Clearance Tag.

(8) No two personnel can have a Switching Permit on the same point or piece of equipment at the same time.

(9) When a Switching Permit is used for operating or testing purposes, the Authorized individual shall remain with the equipment.

(10) Switching Permits shall not be used on hazardous energy control (isolation) point(s) already tagged out under a Safe Clearance.

(11) All affected parties must agree that the nature of the work does not require a Clearance and the Switching Permit provides adequate protection.

(12) The determination of whether a Clearance or a Switching Permit is required shall be the Issuing Authority's responsibility. The Issuing Authority shall not issue a Switching Permit if a Clearance is requested.

(13) Protection and switching order shall be mutually agreed upon by the Issuing Authority and the Authorized Individual.

(14) The Issuing Authority shall repeat back Switching Permit requests.

(15) A record of each Switching Permit shall be kept in the Station Log Book.

(16) The Authorized Individual holding a switching permit is the only person allowed to place or remove the Switching Permit Tag except as described below.

(17) If the equipment cannot be returned to service before the end of the work shift, it shall be placed under a Safe Clearance. Since equipment cannot be under a Switching Permit and Clearance at the same time, the transfer should occur simultaneously.

s. Coordination of Safe Clearances with Contractors and Other Agencies.

(1) Contractors that perform work on project owned equipment or facilities shall use this HECP.

(2) Contractor or other agency work on new installations that does not directly connect to project equipment shall be protected by a government accepted contractor administered Safe Clearance procedure.

(3) When the new installation connects to the existing Project equipment and a Clearance point is necessary to protect personnel or project equipment, a Project Clearance shall be issued to the contractor as required.

(4) The contractor and the project shall coordinate the planning and implementation of these activities.

(5) Each shall inform the other of their energy control procedures, ensure that their own personnel understand and comply with rules and restrictions of their procedures, and ensure that their employees affected by the hazardous energy control activity are notified when the procedural steps outlined in the hazardous energy control plan are to be initiated.

9. CAUTION ORDERS.

a. Caution orders are issued to direct attention to abnormal, unusual conditions or provide special operating instruction. Caution orders must be issued at any time equipment may be endangered by the operation of automatic controls or the operation of equipment adjacent to that being worked on.

b. Caution orders shall not be used in lieu of a Safe Clearance. Caution orders shall not be used to provide protection for personnel.

c. Each caution order shall be assigned a number, using an "X" as a prefix. Caution orders shall be numbered consecutively and entered in blue or black ink.

d. Caution orders shall be issued, released, and tracked in the Station Log Book.

e. A caution order sheet, ENG Form 1928 (see appendix E), shall be prepared for each caution order issued. This shall supplement the powerhouse Station Log.

f. Caution tags, ENG Form 1924 (Aug. 1994) (see appendix E), shall be properly completed and attached to appropriate control devices and equipment. The tag shall be placed in a suitable clear plastic weatherproof envelope when placed where weather or other conditions may damage or disfigure the tag.

g. Caution order records shall be maintained in a separate section of the Safe Clearance log.

10. SAFE CLEARANCE COMMITTEES.

a. The District Safe Clearance Policy committee shall provide oversight of the District Safe Clearance Procedures for the Control of Hazardous Energy to ensure these procedures comply with policies of the Corps. The Committee shall address issues relating to safe clearance policies and regulations, review proposed changes to the District policy, and provide recommendations to the Commander.

b. A Project Clearance Committee shall be organized for the purpose of evaluating the implementation of hazardous energy control requirements. This committee shall make recommendations through the Project Operations Manager to the project representative of the District Safe Clearance Committee for changes to the District HECP.

c. The project committee shall conduct and document unscheduled inspections at least annually (see appendix F). A copy of the inspection documentation (signed by the inspectors) shall be sent to the Operations Manager and the original shall be kept in the Safe Clearance log.

d. The committee shall investigate apparent discrepancies in the application of the HECP. They shall report the following to the Operations Manager:

(1) Findings of facts.

(2) Recommended changes in training or the project hazardous energy control program.

e. The Safe Clearance committee should consist of at least one electrician, one mechanic, and one operator.

11. PERIODIC INSPECTIONS. Periodic inspections shall be accomplished as outlined in appendix F of ER 385-1-31 (see appendix A).

12. TRAINING.

a. Newly hired and transferred employees must be trained and tested on the provisions of the HECP prior to working in the affected area of a Clearance (see appendix G).

b. Contractors and other agency representatives must be trained and tested when affected by a Safe Clearance and before being authorized to hold a Safe Clearance.

c. Refresher training and testing shall be conducted at least annually.

d. Violators of the Project HECP may be given remedial classroom training and re-testing.

e. Records of training and testing shall be maintained at the Project.

f. At minimum, training and testing of Issuing Authorities and Authorized Individuals shall contain the following elements:

- (1) Being able to identify and recognize hazardous energy sources.
- (2) The use of adequate methods and means for energy isolation and control.
- (3) Circumstances that require Clearances.
- (4) Definitions and terms.
- (5) The distinction between lockout and tagout.
- (6) All Clearance procedures, including the following:
 - Request.
 - Issue.
 - Release.
 - Transfer
 - Release by persons other than the Clearance holder.
 - Release or transfer of clearances when the Authorized Individual cannot be contacted in person.

g. A Safe Clearance tag requires the respect equal to that of a lock.

h. The limitations of tagouts and the prerequisites for using them, include, but are not limited to, the following:

(1) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint that a lock does.

(2) When a tag is attached to an energy isolating point, it is not to be removed without the permission of the Issuing Authority and Authorized Individual.

(3) A tag is never to be bypassed, ignored, or otherwise defeated.

(4) Tags must be legible and understandable by all authorized and affected employees.

(5) Tags and their means of attachment must be made of materials, which shall withstand the environmental conditions they may encounter.

(6) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(7) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

i. Any additional training recommended by the Operations Manager, Safe Clearance committee, Issuing Authority, or authorized and Affected Individuals.

j. Requirements described in section 12.B of EM 385-1-1.

k. At a minimum, training and testing of affected employees and other employees who may have access to the area containing the equipment or the controls shall contain the following elements:

(1) The purpose of energy control procedures.

(2) The use of energy control procedures.

(3) All limitations of tagouts and prerequisites for using them, as listed in paragraph 5.

(4) A Safe Clearance tag requires respect equal to that of a lock.

(5) A tag is never to be bypassed, ignored, or otherwise defeated.

l. At a minimum, instruction of other employees who may have access to the area containing the equipment or the controls shall consist of:

- (1) The energy control procedure being used.
- (2) How the energy control procedure affects their work operations.
- (3) A Safe Clearance tag requires respect equal to that of a lock.
- (4) A tag is never to be bypassed, ignored, or otherwise defeated.

m. At least annually, training and testing material shall be reviewed for content and adequacy and updated as needed.

FOR THE COMMANDER:

/s/ 7 November 2006
DONALD A. PINCUS
MAJ, EN
Deputy Commander

8 APPENDIXES

- A Engineer Regulation 385-1-31, *The Control of Hazardous Energy*
- B Definitions
- C Equipment Authorized for Switching Permits
- D Personnel Authorizations
- E Sample Forms
- F Safe Clearance Program Inspection
- G Hazardous Energy Control Certification Examination
- H Safe Clearance Flow Chart

DISTRIBUTION:

Intranet and 2 copies to Library

Appendix A (Engineer Regulation 385-1-31) goes here. Engineer Regulation 385-1-31 is a protected document, available only in PDF format.

[Appendix A.pdf](#)

Appendix B Definitions

Affected Personnel: An employee whose job requires operation or use of a machine or equipment on which servicing or maintenance is being performed under Safe Clearance, or whose job requires work in an area in which servicing or maintenance is being performed. This also includes vendors or visitors who may enter the Clearance boundary.

Authorized Individual: A qualified person who is designated in writing by the Responsible Official (Operations Manager) to request, receive, and implement energy control procedures. The Authorized Individual shall have knowledge of the type, magnitude, and hazards of the energy involved and the methods to be used to control the energy.

Caution Order Eng Form 1928R: A procedure to direct cautious approach to abnormal conditions or equipment or to special operating instructions, which are to be followed.

Clearance Holder: An Authorized person who has requested and has been issued a Safe Clearance.

Clearance point: A device which is positioned according to the requirements of the safe clearance form or switching order portion of the corresponding hazardous energy control procedure. All clearance points shall have a tagout device (red safe clearance tag) attached to it. A clearance point may or may not be a hazardous energy control point.

Corps of Engineers (Corps) Diving Inspector: A Corps employee acting as a diving inspector for Corps or contractor diving operations.

Corps Quality Assurance Representative (QAR): A Corps employee designated in writing by the Contracting Officer to provide quality assurance for a contract.

Do-and-Check: Is a double-check or check-recheck technique. For instance, a powerhouse mechanic submits a Safe Clearance order request, then the duty operator reviews it for completeness. Do-and-check for switching and clearing operations means that one person locates and positions the energy-isolating device. He/she shall do the switching, followed by a second person making an independent check to ensure that the energy-isolating device is correctly positioned, tagged, or locked, if required. All stored energy is bled off in accordance with the switching order portion of the hazardous energy control procedure. This is ordinarily accomplished by having the Issuing Authority (or a qualified designated alternate) perform ("do") the switching,

Electrical Equipment: Any device, which produces, consumes, stores, transmits, or converts electrical energy.

Electrical Line: Any conductor used in the transmission of electrical energy from one point to another.

Energy isolation points: A valve, switch, gate, or other point used to isolate any form of energy which if actuated may cause damage to equipment, personal injury, or other undesirable consequence.

Energy-isolating devices: A physical device that prevents the transmission or release of energy. This includes, but is not limited to:

- Manually operated circuit breakers
- Disconnect switches.
- Slide gates
- Slip blinds
- Line valves
- Blocks

or similar devices with a position indicator which are capable of blocking or isolating energy. The term does not include push buttons, selector switches, and other control circuit type devices.

Energy Source: Includes electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other energy.

Full personnel protection: When a tagout device is used in place of a lockout device, full personnel protection is provided when:

- the tagout device is attached at the same location as the lockout device would have been attached,
- all tagout-related requirements of this regulation have been complied with
- additional means have been taken to provide a level of safety commensurate with that of a lockout device. Such additional means include:
 - the removal of an isolating circuit element,
 - blocking of a control switch,
 - opening and tagging an extra (separated by distance) disconnecting device, or
 - the removal of a valve handle to reduce the likelihood of energizing.

Group Clearance: A lockout and tag out procedure used when servicing and/or maintenance is performed by a crew, craft, department or other group and which affords each employee a level of protection equivalent to that provided by the use of a personal lockout or tagout device.

Hazardous energy: Any form of energy which if uncontrolled may cause damage to equipment, personal injury or other undesirable consequences.

Hazardous Energy Control Procedures (HECP): The written Safe Clearance procedure which clearly and specifically identifies the hazardous energy sources and outlines the scope, purpose, responsibilities, and procedural steps for lockout /tag out and the requirements for testing the effectiveness of energy control measures utilized for the control of the hazardous energy. Switching orders are the elements of Hazardous Energy Control Procedures.

Hazardous Energy Control Program: The written program consisting of energy control procedures and personnel training. Personnel training shall be both initial and periodic. The purpose of the training is to ensure that the purposes and functions of the energy control program are understood by all Affected Personnel and to provide the knowledge and skills required for the safe application, usage, and removal of energy controls.

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

Issuing Authority: A person, qualified by their knowledge of the type and magnitude of the energy, the hazards involved, and the methods or means to control the energy, who is authorized by the Responsible Official (Operations Manager) to issue Safe Clearances. The Issuing Authority is a person with jurisdiction over an area or project, e.g., he/she may be the operator-in-charge of a shift at a powerhouse or substation, the supervisory engineer of a project or facility, or other supervisory person having operational control of systems to be placed under Hazardous Energy Control Procedures.

Journeyman Operator or Lap Operator: The Operator who is not in charge of the shift but carries out energy control procedures under the direction of the Operator-in-charge.

Lockout: A form of hazardous energy control utilizing the placement of a locking device, in accordance with established procedures, on an energy isolating device to ensure that the energy isolating device and the system being controlled cannot be operated or release energy until the lockout device is removed.

Master Tag: A document used for group lockout and tagout which each member of a crew, craft, or other group signs to provide worker accountability. The Master Tag shall be used to indicate the HECP and the limits of the Safe Clearance. Workers must fully comprehend the details of the job and the energy isolation devices actuated or put in place.

Mission-Dependent Equipment: The Project mission includes: providing slack water navigation; generating electrical power; fish passage; flood control, and preservation of

the environment. Equipment is mission- dependent if taking it out of service would prevent navigation, power generation, fish passage, cause environmental harm, etc. The Operations Manager or designated alternate must grant approval for the removal from service of any equipment, which may affect the mission of the project.

Multi-Shift Safe Clearance: A Safe Clearance that is used to cover work, which continues across subsequent day, evening, or night shifts. Multi-shift Safe Clearances are transferred from the shift supervisor on one shift to the shift supervisor on the next shift, etc.

Operations Manager: The person in charge of a multipurpose hydroelectric or Flood Damage Reduction facility.

Operator in Charge of the Shift: Is the Issuing Authority for Hazardous Energy Control procedures at a facility.

Personal locks: Uniquely keyed padlocks issued to or available to Authorized Personnel to be used only for Energy Control Procedures.

Physical barriers: Any device, valve, switch, gate, flange or other physical device that is used to create a barrier between hazardous energy and personnel and equipment.

Protective grounds: Portable grounding cables which, depending on the specific grounding procedures and requirements are used to protect personnel and equipment from electrical energy.

Pressure Systems: All piping, tubing, valves and controls and other devices, which operate or are maintained above atmospheric pressure. Also, see definition of a vacuum system.

Qualified Electrical Worker: A person who by experience or training is authorized to perform unlimited or limited work on authorized electrical equipment. In this case, the reference is to those who shall be installing or removing portable grounds.

Responsible Official: The person in charge of the project or facility who designates the Issuing and Authorized Individuals and who approves and directs the hazardous Energy Control Program.

Restricted Area: Any area where hazardous conditions exist or have potential to exist, such as inside electrical vaults or tanks with potentially contaminated atmospheres.

Routine Safe Clearances: Safe Clearances which employ HECP that have been standardized for a particular system. The popular jargon for the switching order portion of these is "canned clearances."

Safe Clearance: A definite operating arrangement whereby an Authorized Individual, acting individually or as a representative of a crew, removes designated equipment from service by lockout or tagout. A device or point under Safe Clearance does not necessarily indicate a zero energy state at that device or point. When issued, the Safe Clearance is the authorization to perform specified work in accordance with the limits of the Safe Clearance. Safe Clearance involves the following general steps:

- Request for Safe Clearance by an Authorized Individual
- Accomplish requirements for Safe Clearance (isolation, guarding, grounding)
- Safe Clearance issued
- Perform work
- Clear work area of tools and workers
- Release of Safe Clearance requested
- Release of Safe Clearance and return equipment to service

Safe Clearance Form (Eng. Form 1927- R): A form on which requests for Safe Clearances, Safe Clearance releases, and all other pertinent data in connection with Safe Clearances is maintained. Computer generated facsimiles are authorized.

Safe Clearance request: A written or oral request to the Issuing Authority for the implementation of specified Hazardous Energy Control Procedures.

Safe Clearance Tag, ENG Form 1925: A tag for attaching to each operational control point of equipment or entry point to an area requiring a Safe Clearance. Computer generated labels for attachment to these Tags are authorized as long as the Tag retains compliance with the requirements for tagout devices.

Shift Supervisors: Principal Authorized Individuals or Authorized Individuals who are in charge of day, evening, or night shift work requiring multi-shift Safe Clearances. Refer to the definition of multi-shift Safe Clearance.

Stored Energy: Energy (electrical, mechanical, or chemical) that might be found in a charged capacitor, a loaded spring, chemical solutions, or similar forms.

Station Log: The official written record of events at the facility.

Switching Orders: This is the portion of the HECF that contains the specific instructions for switching, valving, or other operational steps needed in preparing equipment for a Safe Clearance (lockout/tag out). It is used for clearing out equipment and installing the lockout/tag out in a particular order, which results in the safest conditions.

Switching Permit: A protective procedure providing restricted authorization for designated personnel to take designated equipment out of service for limited maintenance or test operation.

Tagout: Hazardous Energy Control Procedures which meet the requirements of Paragraph 5, Policy, (e.1. through e.6.)

Tagout devices (Danger Tags): A prominent warning device, such as a tag with a means of attachment that can be securely attached to an energy-isolating device in accordance with established procedures to indicate that the energy isolating device and system being controlled may not be operated until the tagout device is removed.

Temporary Lifts: The authorized act of working on or operating equipment while it is energized and with the removal of hazardous energy control devices. Temporary lifts must be detailed on the Master Tag and have authorization of the responsible and issuing individuals.

Vacuum Systems: All piping, tanks, tubing, valves, controls, and other devices, which operate or are maintained below atmospheric pressure.

Appendix C
Equipment Authorized for Switching Permits

The following equipment may be operated or removed from service without a safe clearance under the switching permit provisions of this hazardous energy control program.

- Project elevators
- Motorized doors
- Project cranes
- Project water heaters
- Deck wash pump and piping system
- Project air bubbler systems
- Project sewage pumps, blower, comminutor, and chlorinator
- Domestic water well pumps
- Project 120, 240, and 480 volt outlet circuits
- All electrical heaters
- Project lighting circuits and timers
- Code call bells
- Unit air conditioners - UC-1, UC-2 and UC- 3
- Exhaust fans, recirculating fans and intake fans
- Electronic precipitron
- Fish counting house air conditioning system
- Air compressors and associated equipment
- Shop equipment - electrical and mechanical
- Project sump pump motors of 480 and lower voltage
- Spillway emergency Diesel generator
- Oil storage room pumps and motors
- Gravity oil storage tank
- Farval grease systems
- Twin strainers (one at a time)
- Unit headcover pumps (one at a time)
- Unit turbine bearing oil pumps (one at a time)
- Unit 480 volt governor oil pumps
- Hydraulic headgate oil pumps (one at a time)
- Traveling fish screens
- Project CO₂ systems
- Transformer nitrogen supply systems
- Battery chargers
- Small craft intercom systems
- Unwatering and drainage pumps control power for sump water level, control systems, vacuum breaker repair, and pm's (one at a time)

- Water level servomanometer system
- Fish exit sluice gate, motor and control system
- Fish counting board lights and barrier gate
- Fish entrance weir gates, motors and gear reducer
- Control switch for the 4160v governor oil pump for strainer cleaning
- Visitor area irrigation sprinkler systems
- Unit 4, 5, & 6 generator cooling water motor operated valves and motors (unit must not be running)
- Turbine blade servomotor oil, catcher return oil pumps
- Fish ladder make-up valve and motor
- Navlock fill and drain valves, one at a time for minor preventive maintenance work. (Lock full on valves 3 & 4, drained on valves 1 & 2)
- Navlock downstream gate (with lock drained & valves 3 & 4 closed).
- Navlock upstream gate (with lock full & valves 1 & 2 closed).

Juvenile Fish Facility

- Motorized doors
- Shop equipment - electrical and mechanical
- Backup air compressor
- Fish raceway crowders

Appendix D
Example

Personnel Authorizations

Project Name

DATE OF ISSUE: *Insert Date*

Responsible Official

In Accordance with ER 385-1-31, *Insert Name*, *Insert Position*, is designated as the responsible official for the *Insert name* Project.

Clearance holders

In Accordance with ER-1-31, the following persons are authorized to receive switching permits and clearances as part of the Corps of Engineers "Safe Clearance Procedures" at *Insert Project*. The type of Clearances each individual may be issued is listed. Clearances shall be issued to individuals by name only, never by position or title. The only exceptions to this shall be the Chief Powerplant Operator and the Bonneville Power Administration (BPA) dispatcher.

Electrical The following individuals may receive Switching Permits and Safe Clearances for all electrical work to be performed on any project equipment and its connected electrical circuits. Mechanical devices associated with this equipment may be included.

Insert Names

Mechanical The following individuals may receive Switching Permits and Safe Clearances for all mechanical work to be performed on any project equipment and its connected piping. Electrical devices associated with this equipment may be included.

Insert Names

Technical The following individuals may receive Switching Permits and Safe Clearances for testing, revising, and modifying electrical or mechanical components of Project equipment.

Insert Names

Fish Facility The following individuals may receive Switching Permits and Safe Clearances for all Fishway related work on the Project.

Insert Names

Construction The following individuals may receive Safe Clearances only for specified work under active Construction Contracts on the Project.

Insert Names

Elevator Maintenance The following individuals may receive Switching Permits and Safe Clearances on the Project Elevators.

Insert Names

Supervisory The following individuals may receive Switching Permits and Safe Clearances for all types of work on the project.

Insert Names

Issuing Authorities In addition to the duties and responsibilities described in the *Insert Project Clearance Program* and ER 385-1-31, the Operator in Charge may receive Safe Clearances issued to the position for the following conditions:

- Line terminal clearances on tie lines and supply lines to and from outside utilities or the power marketing agency (BPA) to establish safe working conditions within areas of high voltage equipment energized by these authorities.
- To hold defective equipment out of service or prevent operation of malfunctioning equipment which might be damaged if operated.
- In cases where emergency repair work is needed in order to restore critical equipment to service and no clearance holders are available to take clearances.

Issuing Authorities are:

Insert Names

Journey Level Operator The journey Level Operator is authorized to receive Switching Permits and Safe Clearances on all equipment under the control and jurisdiction of the Operations Section.

Insert Names

Authorized to sign on Group Clearances All the above personnel and the following:

Insert Names

Signature Block Here

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STATION Lower Granite	CORPS OF ENGINEERS SAFE CLEARANCE ORDER FORM ER-385-1-31	Clearance Date: 12-Sep-02
CLEARANCE NO 2002220		Clearance Time: 8:35
SYSTEM AND HAZARDS TO BE CLEARED SPILLWAY FEEDERS 1 & 2		CLEARANCE COMPLETED BY SH/OP

PROCEDURAL STEPS FOR SHUTTING DOWN, ISOLATING, BLOCKING, AND SECURING SYSTEM TO CONTROL HAZARDOUS ENERGY

- 1 SPILLGATE MOTORS, BUS #1, SUPPLY BREAKER OPEN AND TAGGED
- 2 SPILLGATE MOTORS, BUS #2, SUPPLY BREAKER OPEN AND TAGGED

Cont.- Procedural steps for shutting down, isolating, blocking, and securing system to control hazardous energy.

The form above is a sample.

**Appendix F
 Safe Clearance Program Inspection**

This form is the record of compliance with the Department of the Army, U.S. Army Corps of Engineers Engineer Regulation (ER) 385-1-31, The Control of Hazardous Energy (Safe Clearance), Section 5.(g): "Periodic (at least annual) unannounced inspections of hazardous energy control procedures and review of energy control programs shall be conducted."

The inspections should consist of spot checks that are done monthly by one or more members of the safe clearance committee. Note: Inspections shall be conducted by authorized individuals other than those utilizing the specific energy control procedure being inspected. This means a committee member cannot inspect his/her own safe clearance(s).

Upon completion, this form shall be sent to the Operations Manager for certification. It shall then be returned to the safe clearance record book where it shall be kept for 2 years.

Location of inspection (Circle one):

Performed By:

The system(s) on which the energy controls procedures were inspected:

Date of inspection: _____

Item	Satisfactory	Deficient (Explain in remarks section)	Not observed
1. Entries in Station Log are complete and legible			
2. Safe Clearance Request (ENG Form 1927-R) forms are complete and legible.			
3. Switching instructions are complete, detailed, and legible.			

Item	Satisfactory	Deficient (Explain in remarks section)	Not observed
4. Tags are complete, legible, and capable of withstanding the surroundings.			
5. Safe clearances are issued to authorized individuals, only.			
6. List of authorized individuals is up-to-date.			
7. Authorized individuals are provided with a copy of the Safe Clearance Request form for procedure verification.			
8. Tagout devices are affixed in such a manner as shall clearly indicate that the operation or movement of energy isolating devices from the safe position is prohibited.			
9. Where possible, tagout devices are affixed at the same point where the lockout device would be attached.			
10. Equipment under clearance is safe for the work to be performed.			
11. All potentially hazardous stored or residual energy is relieved, disconnected, restrained, or otherwise rendered safe.			
12. Clearance holders periodically check for leaking valves and other causes of hazardous energy re-accumulation.			
13. The authorized individuals assure the correct positioning (energized/de-energized) of all energy isolation devices, and the correct placement of lockout and tagout devices; and place initials on all tags as proof of check.			
14. All required-physical barriers and protective grounds are installed.			
15. Placement and removal of temporary protective grounds are recorded by the issuing individual.			
16. Work does not begin until all switching, tagging, inspections, verifications, and paperwork has been completed.			
17. Group safe clearance procedures are			

Item	Satisfactory	Deficient (Explain in remarks section)	Not observed
being followed for all work done under safe clearance by two or more workers.			
18. Each person working under group safe clearances signs the master tag or work permit verifying he/she fully comprehends the details of the job, the energy isolation devices actuated, and the lockout or tagout devices installed.			
19. Changes to any energy isolating device, including temporary removal of a lock or tag, are not done until each individual group member has been notified and is clear of any possible danger resulting from the change.			
20. Temporary removal of lockout or tagout devices are coordinated in advance with the responsible and issuing individuals. If more than one safe clearance is issued or there are overlapping safe clearances, all responsible parties coordinate the operation to assure the safety of all personnel.			
21. Before lockout or tagout devices are removed and energy is restored to the system, work areas are inspected to ensure that nonessential items have been removed from the system and the system components are operationally intact and that all personnel have been safely positioned or removed from the area.			
22. Before lockout or tagout devices are removed and energy is restored to the system, affected personnel are notified that the lockout or tagout devices shall be removed.			
23. At the time of requesting the release of a safe clearance, the authorized individual reports to the issuing individual that all equipment is ready for service and personnel are in the clear.			

Item	Satisfactory	Deficient (Explain in remarks section)	Not observed
24. Records of safe clearances are maintained locally for at least two years.			
25. ENG Form 1928-R, Caution Order Record, are prepared for each caution order issued.			
26. Previous records of inspection filed in the safe clearance record book.			

Remarks:

Submitted by:		Committee member	Date

Review and certification:		Operations Manager	Date

Appendix H Safe Clearance Flow Chart

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