

US Army Corps of Engineers Tulsa District

Safety and Occupational Health Office

Hazardous Energy Control and Safe Clearance Program (Power Generation, Transmission, and Distribution)

SWT OM 385-1-31-B

5 February 2019

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DEPARTMENT OF THE ARMY TULSA DISTRICT CORPS OF ENGINEERS 2488 E 81st Street Tulsa, Oklahoma 74137

CESWT-SO

Office Memorandum NO. 385-1-31-B

5 February 2019

Hazardous Energy Control and Safe Clearance Program (Power Generation, Transmission, and Distribution)

1. <u>PURPOSE AND SCOPE</u>. This regulation is supplemental to ER 385-1-31. It establishes consistent procedures and criteria for the safe and reliable control of hazardous energy at USACE operated facilities. These procedures are established to prevent injury to personnel, damage to equipment or the unauthorized removal from or return to service of equipment, which would expose personnel, or equipment to injury or damage. For the purpose of this regulation, Hydropower Facilities include all powerhouses and transmission facilities.

2. <u>APPLICABILITY</u>. This regulation applies to all Southwestern Division Tulsa District Hydropower Facilities.

3. <u>REFERENCES</u>.

- a. 29 CFR 1910.147, 1910.269, 1910.333.
- b. ER 385-1-31, The Control of Hazardous Energy, 1 November 2009.
- c. OSHA Directive #CPL:02-00-147.
- d. ANSI C2, National Electrical Safety Code

e. ANSI/ASSE A10.44, Control of Energy Sources (Lockout/Tagout) for Construction and Demolitions Operations.

- f. EM 385-1-1
- g. AR 690-700,

4. EMERGENCIES.

a. In an emergency (i.e., imminent threat to life or limb), the Responsible Official may modify or suspend any of these requirements temporarily as may be considered necessary to permit proper handling of the specific emergency.

b. In handling such emergencies, safety of personnel and members of the public shall be given predominant consideration.

c. If emergency switching is required and Authorized Individuals are not available, other personnel may perform switching if deemed qualified by the Responsible Official.

d. All emergency actions and decisions shall be recorded in the Station Log.

5. <u>RESPONSIBILITIES</u>.

a. The District Chief, Safety and Occupational Health Office is responsible for the development, implementation and audit of the HEC Program.

b. The District Chief, Operations Division is responsible for implementation of the HEC program.

c. The District Chief of Hydropower is responsible for the overall implementation, management and oversight of the Hazardous Energy Control (HEC) program.

d. The Responsible Official at each Hydropower facility shall be the Power Plant Operation Manager or Power Plant Specialist. The Responsible Official has overall responsibility for their Project's Program (and associated HEC procedures) and ensures that the requirements of this memorandum are properly applied and adhered to. Responsible Officials shall:

(1) Implement the HEC program and procedures applicable to the facilities under their control. Complete the necessary supplemental information in Appendix G and assure that the supplemental information is reviewed and revised as necessary and updated at least annually.

(2) Authorize, in writing on the HEC Personnel Authorization Form in Appendix G individuals who are qualified to be Affected Personnel, Issuing Individuals, Authorized Individuals or Designated Representatives.

(3) Authorize, in writing on the Equipment Authorization Form in Appendix G, equipment that can be removed from service without a clearance. Complete associated switching permit and Activity Hazard Analysis documentation.

(4) Authorize all safe clearances that require equipment outages that affect the mission of the plant. For this program, the mission of the plant is defined as the outage of any equipment that affects the generation or transmission capacity or capability.

(5) Authorize all safe clearances that do not require equipment outages that affect the mission of the plant.

(6) Assure periodic inspections of their facilities' hazardous energy control program and procedures are performed.

(7) Assure that manuals and drawings which may be required for the application of lockout or tagout devices are available to all persons involved in safe clearances.

(8) Assure that initial and annual training on the HEC program and procedures are provided to all employees.

(9) Assure that appropriate investigation, upward reporting and action is taken subsequent to violations of the HEC program and procedures.

(10) Designate a representative to serve as Responsible Official in their absence. This designation must be in writing and must have specific dates for the designation. Each absence must have a new designation. This designation shall be recorded in the Station Log in red ink identifying the temporary Responsible Official, start date and end date.

e. The Issuing Individual maintains control over supervised equipment and systems. Upon issuance of a safe clearance the Issuing Individual temporarily relinquishes control of equipment to Principal Authorized Individuals (PAI) for the accomplishment of servicing/maintenance work. The Issuing Individual shall:

(1) Review requests for safe clearance; upon verifying that the proposed HEC procedures meet the requirements of the HEC program, and that the procedures are adequate for the work to be performed, the Issuing Individual may approve the Safe Clearance Request form.

(2) Provide the Principal Authorized Individual receiving the clearance with a copy of the Safe Clearance Order form (ENG Form 1927) for procedure verification.

(3) Follow SWT policy for requesting and coordinating interruption of services.

(4) Verify the switching order for removal from service and restore to service, if applicable. Perform the positioning of all energy isolation devices as listed in the switching order. (NOTE: The positioning of all energy isolation devices as listed in the switching order may be performed by a Designated Representative.)

(5) Perform the positioning of all energy isolation devices as listed on the Safe Clearance Order form and tag all points accordingly; place locking devices and tags, affixing in a manner that will hold the energy isolating devices in a "safe" position; assure that tags are fastened at the same point at which the lockout device is attached. (NOTE: All the above may be performed by a Designated Representative of the Issuing Individual.)

(6) Maintain awareness of equipment condition and status during the safe clearance.

(7) Assure Principal Authorized Individuals (PAI) have released the safe clearance before returning equipment to service. Remove tags and locking devices and perform switching necessary to assure equipment is ready for service after work has been completed and. (NOTE: This may be performed by a Designated Representative of the Issuing Individual.)

(8) Record the request, issue, release and other required safe clearance information in the station log.

f. The Principal Authorized Individual (PAI) requests the safe clearance, holds the clearance and manages the safe clearance such that work performed by Affected Persons working under their clearance and/or group lockout/tagout is as detailed in this HEC program. The PAI shall:

(1) Ascertain the exposure status of individual group members (during group lockout/tagout) with regard to the lockout or tagout of the system.

(2) Have overall job-associated lockout or tagout control responsibility to coordinate affected work force and ensure continuity of protection when more than one crew, craft, department, etc., are involved.

(3) Make request for safe clearance by using the Safe Clearance Request form (NOTE: Requests for safe clearances may be made verbally.)

(4) Write the Safe Clearance Procedures and required AHA's to assure that the protection to be provided is adequate for the work to be performed.

(5) Assure the correct positioning (energized/de-energized) of all energy isolation devices and tags.

(6) Make appropriate tests to verify isolation of the system; if there is a possibility of accumulation of stored energy to a hazardous level, verification of isolation shall be continued.

(7) Affix a system lock on each lockable energy isolation device, place the key or keys into a group lock box, and secure the lock box with a personal lock prior to beginning work. This lock shall remain in place for duration of the clearance or until the clearance has been transferred to another PAI.

(8) Assure installation of all required physical barriers and temporary protective grounds.

(9) Assume responsibility for the system covered by the safe clearance until it is released to the Issuing Individual or transferred to another Authorized Individual.

(10) Keep the Issuing Individual informed of lockout and tagout conditions and the status of work.

(11) Assure that all affected persons place their individual personal locks, sign onto the master tag before beginning work and removes their individual personal lock and signs off of the master tag when their work is completed.

(12) Assure that the equipment is serviceable following completion of servicing and maintenance and prior to releasing the safe clearance. Assure that all nonessential items have been removed from the area and that all personnel have been notified and removed when affecting a safe clearance release.

4

(13) Inform all Affected Persons of the clearance and its boundaries. Notify all Affected Persons prior to the release or a temporary removal of lockout/tagout devices.

g. Authorized Individuals are qualified to hold clearances as identified in the HEC program. Authorized Individuals shall be named in writing by the Responsible Official on the HEC Program Authorization Form in Appendix G. An Authorized Individual may act in the capacity of a PAI or an Affected Person as appropriate.

h. Affected persons perform servicing and maintenance in accordance with this regulation. Affected persons shall:

(1) Clearly understand the boundaries of the safe clearance.

(2) Verify all equipment is properly removed from service.

(3) Sign on and off of the Master Tag Sheet before entering and when exiting the boundaries of the clearance.

(4) Install and remove personal locks on the lock box before entering and when exiting the boundaries of the clearance.

(5) Keep up with the status of the safe clearance at all times.

(6) All employees shall report procedural errors and/or violations to their supervisor and/or the Responsible Official.

6. <u>TAGOUT ALONE</u>. When tagout alone is used (i.e., equipment is incapable of accepting locking equipment) **All of the following conditions shall be met**:

a. Personnel shall be instructed in the limitations of tags and;

b. Additional means shall be employed to provide a level of protection equivalent to that provided by a lock (e.g., placement of the tag in a manner which prohibits operation of the energy isolation device, removal of an isolating circuit mechanism, opening of an extra disconnecting device, removal of a valve handle to reduce the likelihood of inadvertent energization, etc. and;

c. Tags shall be treated as locks and shall be removed by the Issuing Individual or his Designated Representative. Tags shall never be bypassed, ignored, or otherwise defeated. (Except for emergencies as defined in Paragraph 4 of this regulation).

7. <u>LOCKS</u>.

a. Locks shall be capable of withstanding the environment and conditions to which exposed for the maximum period of time the exposure is expected and shall also be substantial enough to prevent removal without the use of excessive force or unusual techniques (such as with the use of bolt cutters).

b. System isolation locks in a group or set shall be keyed alike. Each group or set of system locks shall be keyed differently than other group or sets and each shall have a unique identifying color (other than RED).

c. Personal locks shall be keyed different from all other locks. Personal lock shall have individuals name and be **RED** in color. An Authorized Individual may have more than one personal locks keyed alike.

8. <u>TAGS</u>. All tags shall be constructed and printed so that exposure to weather conditions, wet or damp locations, or corrosive environments will not cause the tag to deteriorate or the message to become illegible.

a. ENG Form 1925, Danger – Do Not Operate Main/Auxiliary Hold Card.

(1) Main/Auxiliary Hold Cards shall be reproduced on red stock. An example is shown in Appendix G.

(2) All information on the Main Hold Card is required to be filled out with the exception of the Auxiliary Card Placement section. This section is permitted to reference the Safe Clearance Order form.

(3) All information on the Auxiliary Hold Card is required with the exception of the time the card was placed.

(4) Computer generated labels are authorized as long as the tag retains compliance with the requirements for tagout devices.

(5) Auxiliary Hold Cards shall be attached to the locking devices or to the same point that the locking device is attached. Tags shall not be attached to a system isolation lock.

b. ENG Form 1924, Caution Order Tag.

(1) Caution Order Tags shall be reproduced on yellow stock. An example is shown in Appendix G.

(2) All information on the Caution Order Tag is required.

(3) Caution Order Tags shall be attached directly to the control device associated with the equipment.

c. Temporary Protective Ground Tag.

(1) Temporary Protective Ground Tags shall be green in color and shall be similar to the example in Appendix G.

(2) Each facility shall have one set of uniquely numbered Temporary Protective Ground Tags.

d. Personal Tag.

(1) Personal Tags shall conform to one of the examples in Appendix G.

(2) Each employee shall have one set of Personal Tags. They should be identified with the employees name and numbered sequentially.

e. All tags shall be attached by an all-environment-tolerant nylon cable tie that is non-reusable; non-releasable; self-locking; with a minimum unlocking strength of 50 pounds.

9. <u>SWITCHING ORDER</u>. A detailed switching order listing in sequence switching instructions for circuits rated above 480 VAC is required. A separate switching order is required for the removal from service and the return to service.

10. <u>HEC PROCEDURES</u>. HEC procedures are defined in Appendix B.

11. <u>CAUTION ORDERS</u>. Caution Order procedures are defined in Appendix B.

12. <u>**OUTSIDE/CONTRACTOR PERSONNEL.</u>** When non-USACE personnel perform construction or maintenance at USACE operated facilities and are exposed to hazardous energy, the non-USACE employees shall also be protected by an HEC program. Specific procedures and authorizations for outside/contractor personnel are identified in Appendix E.</u>

13. <u>**RECORD RETENTION.</u>** All training records, clearance logs, forms, master tag sheets and inspection reports shall be kept on file for a minimum of two years.</u>

14. <u>HEC PROGRAM VIOLATIONS</u>. All violations of the HEC program shall be immediately reported to the Responsible Official. Violators shall be subject to appropriate administrative disciplinary action. The Responsible Official shall notify the Tulsa District Chief of Hydropower of the violation for reporting up the chain of command as appropriate. Appropriate documentation shall be maintained by the Responsible Official.

15. <u>**INSPECTIONS AND PROGRAM REVIEW.</u>** The inspections and program review requirements are defined in Appendix F.</u>

16. <u>TRAINING</u>. The training requirements are defined in Appendix C.

17. <u>EQUIPMENT REPLACEMENT/MAJOR REPAIR</u>. Whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new

machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.

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Chief, Safety and Occupational Health Office

Appendices

- A. Definitions
- B. HEC Program for Hydropower Facilities
- C. Training Requirements
- D. Line Clearances
- E. Outside/Contractor Personnel
- F. Periodic Inspections and Program Review Procedures
- G. Forms

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APPENDIX A

DEFINITIONS

Affected Person. A person whose job requires operation or use of a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires work in an area in which servicing or maintenance is being performed.

Activity Hazard Analysis (AHA) A documented process by which the steps (procedures) required to accomplish a work activity are outlined, the actual or potential hazards of each step are identified, and measures for the elimination or control of those hazards are developed.

Authorized Individual. A qualified person authorized in writing by their employer to lockout and/or tagout machines or equipment in order to perform installation, servicing or maintenance on that machine or equipment. An Authorized Individual employee becomes a PAI if they are holding the clearance or an Affected Person if their duties include performing servicing or maintenance under that clearance or lockout/tagout procedure.

Caution Order. A procedure to direct cautious approach to abnormal conditions or equipment or to special operating instructions which are to be followed.

Caution Order Record, ENG Form 1928 (see Appendix G). A form on which to record information pertinent to each Caution Order issued.

Caution Order Tag, ENG Form 1924 (see Appendix G). The tag to be attached to equipment to implement the Caution Order procedure.

Danger - Do Not Operate Tag, Main/Auxiliary Hold Card, ENG Form 1925 (see Appendix G). The tag that is to be attached to each energy isolation device on equipment or entry point to an area requiring a safe clearance. Computer generated labels/tags are authorized as long as the tag retains compliance with the requirements for tagout devices.

Designated Representative to the Issuing Individual. An Authorized Individual identified in the Hazardous Energy Control Program that is permitted to place tags on energy isolation devices or to perform other functions on behalf of the Issuing Individual under the Issuing Individual's direction.

Direct Supervision. One person is under "direct supervision" of another individual when the person providing the "supervision" is physically with and overseeing the operation being performed by the employee (i.e., a trainee may perform certain job duties when the supervisor/leader/journeyman is physically with them, overseeing the work being performed by the trainee).

(Electrically) Qualified Person (EQP). One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the electrical hazards that might be present with respect to that

equipment or work method. The EQP shall be trained to understand: the specific hazards associated with electrical energy; the relationship between electrical hazards and possible injury and the safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective job or task assignments. See NFPA 70E and OSHA for electrical safety training requirements. For SWT purposes, individuals authorized to hold electrical clearances on the HEC Program Authorization Form are the only Electrically Qualified Persons.

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, slip blinds, line valves, blocks, or similar devices, capable of blocking or isolating energy, with a position indicator. The term does not include push buttons, selector switches, other control circuit type devices, blind flanges, etc.

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

Full Personnel Protection. A condition required when a tagout device is used in place of a lockout device. Full personnel protection is provided when:

a. The tagout device is attached at the same location as the lockout device would have been attached;

b. All tagout-related requirements of this regulation have been complied with, and

c. 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.

Ground Tags. See Temporary Protective Ground Tags (TPG Tags).

Group Lockout and Tagout. A lockout and tagout 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.

Group Lockbox. A device used during group lockout to secure keys for the lockout devices.

Hazardous Energy Control Procedure. The written procedure which clearly and specifically identifies responsibilities and procedural steps for lockout and tagout and the requirements for testing the effectiveness of energy control measure.

Hazardous Energy Control Program. The written program that includes, as a minimum, identification of roles and responsibilities, energy control procedures, identifying energy control locks and tags, procedures for removing energy control locks and tags, employee training, procedure inspections and program review.

Incidental Persons. Visitors and/or other employees who may be in an area where energy control procedures are being used but will have no role or activity with any equipment that is under a safe clearance.

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

Issuing Individual. 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, which is authorized by the Responsible Official to issue safe clearances. The Issuing Individual is a person with jurisdiction over an area or project, e.g., they may be the operator in charge of a shift at a powerhouse or lock, the supervisory engineer of a project or facility, or other person having operational control of systems to be placed under hazardous energy control procedures.

Locking Device. The hardware utilized to attach an isolation lock to an isolation point. (e.g., hasps, ball valve locking device, circuit breaker locking device)

Lockout. The placement of a lockout device on an energy isolation device, in accordance with an established procedure ensuring that the energy isolation device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device. A device that utilizes a positive means such as a lock and any associated hardware needed to secure an energy isolation device in the safe or off position to prevent the energizing of a machine or equipment. The device must be identifiable, durable, and require excessive force or unusual tools/techniques to be removed by someone other than the Authorized Individual that attached the device. Included are blank flanges and bolted slip blinds.

Master Tag (see Appendix G). 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 that the employees working under a group safe clearance have read the hazardous energy control procedures and understand the limits of the clearance and fully comprehend the details of the job and the energy isolation devices actuated or put in place.

Mission of the Facility. To provide generation, transmission and flood control at its full capacity and capability.

Personal Lock. Uniquely keyed Safety locks issued to or available to personnel to be used only for Hazardous Energy Control. They shall be RED in color and identify the person and craft to whom they are issued.

Personal Tag (see Appendix G). A tag required to be used during lockout/tagout without a clearance (different from the ENG Form 1925).

Principal Authorized Individual. An Authorized Individual who requests and is issued a clearance or who is qualified and identified as being designated to remove equipment from service using lockout/tagout procedures. An Authorized Individual becomes a Principal Authorized Individual once a clearance is requested.

Qualified Person. See "Electrically Qualified Person"

Responsible Official. The person in charge of the project or facility; designates the Issuing and Authorized Individuals and who 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.

Safe Clearance. A definite operating arrangement whereby a Principal Authorized Individual, acting individually or as a representative of a group, removes designated equipment from service by lockout or tagout.

Safe Clearance Request and Order Forms, ENG Form 1927 (see Appendix G). The forms 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.

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

Switching Order. A written procedure specifying the order in which all isolation components rated higher than 480 VAC shall be switched to remove from service and to return to service. The sequences of the switching order shall be developed so as to safely remove equipment from service and safely return equipment to service without harm to personnel and without interruption of service to other components. This procedure shall be separate from the ENG Form 1927 and shall contain only the switching necessary to isolate components higher than 480 VAC.

Switching Permit. Authorization for a piece of equipment to be removed from service associated with Lockout/Tagout without a clearance. The switching permit includes the step by step procedure for removal from and return to service.

System. Includes machinery, equipment, and electrical, hydraulic, and pneumatic lines that are under the operational control of plant operator or equivalent.

System Isolation Locks. Hazardous energy control locks that are placed and removed by the Principal Authorized Individual on isolation points for the purpose of preventing operation of the equipment. A set of system locks shall be uniquely colored with only one key. A set of system locks can be any color except RED.

Tagout. The placement of a hazardous energy control tag (ENG Form 1925) on an energy isolation device, in accordance with established procedures, to indicate that the energy isolation device and the equipment being controlled may not be operated until the tag is removed.

Tagout Device. The hazardous energy control tag (ENG Form 1925) and its means of attachment.

Temporary Protective Grounds (TPGs). Equipment intended to provide intentional grounding of an electrical circuit. Sometimes TPGs take the form of electrical conductors spliced or otherwise joined together with connection devices for connecting to an exposed electrical conductor. A manufacturer normally provides this type of device with an established fault-duty rating. Sometimes referred to as safety grounds, grounding sets, grounding devices.

Temporary Protective Ground (TPG) Tags (see Appendix G). Tags used as part of a hazardous energy control procedure to assure accountability of temporary protective grounds.

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APPENDIX B

HEC PROGRAM FOR HYDROPOWER FACILITIES

1. HAZARDOUS ENERGY CONTROL AND SAFE CLEARANCE PROCEDURES.

a. Safe Clearance Identification Number. Clearances shall be numbered consecutively. Numbering system will identify the station for which the clearance is issued, the year in which it is issued and the number of the clearance for that year. The number will comprise station designation, the last two digits of the year in which it was issued, and the number of the clearance for that year assigned in consecutive order. The record of clearance numbers will be maintained at the station at which the work is performed. For clearances which the Power Plant Senior Controller must issue, the number will be furnished by the station at which the work is to be performed.

Examples of clearance numbers:				
EUF-08-25	Eufaula-2008-Clearance number 25			
TNK-08-05	Tenkiller-2008-Clearance number 5			
RSK-08-05	Robert S. Kerr-2008-Clearance number 5			
BRB	Broken Bow			
WBF	Webbers Falls			
DEN	Denison			
KEY	Keystone			
FTG	Fort Gibson			

b. Requests for a Safe Clearance.

(1) All requests for a Safe Clearance shall be accompanied by an approved Activity Hazard Analysis (AHA).

(2) Only Authorized Individuals listed on the HECP Program Authorization Form in Appendix G may request a clearance. Furthermore, they may only request a clearance for the type of equipment they have been authorized to hold.

(3) The Principal Authorized Individual (PAI) makes the request for a safe clearance. This request may be made using the Safe Clearance Request form or verbally.

(4) Requests for safe clearance shall be definite, specific and provide adequate information for the Issuing Individual to complete the Safe Clearance Order form.

(5) The Responsible Official must authorize the safe clearance by signing the Safe Clearance Order form if it affects the mission of the facility. The authorization may be made verbally and notated as such in the Station Log. The Safe Clearance Order form must be signed by the Responsible Official at their earliest convenience.

c. Issuing a Safe Clearance.

(1) The Issuing Individual and the PAI shall communicate to assure that the proposed isolation points are sufficient to cover the scope of work. The Issuing Individual shall review all safe clearance requests and verify the following:

(a) An adequate analysis of the type, magnitude, and hazards of the energy to be controlled has been conducted and all hazardous energy sources have been identified.

(b) The proposed procedure will safely control all hazardous energy sources.

(c) The proposed procedure will be applied and removed in proper sequence.

(2) The Issuing Individual will fill out a Safe Clearance Order form, tags and switching order, if necessary. If the PAI requesting the clearance is at a remote site, the PAI may fill out the tags, safe clearance order form and switching order forms and will send copies to the Issuing Individual for review. Auxiliary Hold Card ENG Form 1925 will be used for each clearance point and must be properly issued and logged.

(3) Switching orders shall contain the clearance number and either suffixed by a small "a" to remove from service or "b" to return to service.

(4) The Responsible Official will make whatever arrangements necessary for the interruption of service according to SWT regulations or policy.

(5) The Issuing Individual or Designated Representative performs the energy isolation procedures as specified below. **NOTE**: Items (a) and (b) below may be performed in any order as determined safe by the Responsible Official.

(a) The Issuing Individual or Designated Representative performs the energy isolation procedures according to the switching order, applies locking devices and clearance tags. The Designated Representative if used shall notify the Issuing Individual prior to the start and immediately following completion of switching order. The time the switching order was issued will be logged in red in the station log book.

(b) The Issuing Individual or Designated Representative shall notate on the Auxiliary Hold Card who the tag was placed by.

(c) The PAI requesting the clearance cannot be the Designated Representative while the clearance is being issued or held.

(6) The Issuing Individual or DR shall place any Auxiliary Hold Cards not issued at the time the clearance is issued inside the group lock box and shall be noted on the Clearance Card Log.

(7) The PAI shall check each detail for accuracy and shall assure that energy isolating devices are properly positioned and tagged. The PAI shall place system locks on each lockable energy isolation device. The PAI shall verify the effectiveness of all isolation points.

(8) Once the PAI has accomplished locking of the energy isolation devices, the PAI will place the system lock key(s) into a group lock box and secure the lock box with their personal protective lock. This lock shall remain in place for the duration of the clearance.

(9) The Main Hold Card shall be attached to the PAI's personal protective lock on the group lock box or placed inside the group lock box as long as all information on the main hold card can be read without opening the group lock box.

(10) The Issuing Individual will then issue the clearance to the PAI. The PAI will sign the Safe Clearance Order form accepting the clearance. At remote sites, the Safe Clearance Order form will be kept in the control room or main dispatch point and transmitted by electronic means. When electronic means are not available at remote sites, the clearance may be issued verbally and the Issuing Individual will sign the Safe Clearance Order form for the PAI

(11) Upon issuance of the safe clearance, the following will be entered in the station log in **Red Ink**:

- (a) Stamp Clearance Issued
- (b) Safe clearance number
- (c) Purpose of the safe clearance and system to be cleared
- (d) Date and time (in military time) of issue
- (e) Names of Issuing Individual and PAI receiving the safe clearance
- (f) Authorized by
- (g) Clearance issued verbally at remote site, if applicable.

d. Group Safe Clearance.

(1) Each Affected Person working under the group clearance shall sign the Master Tag Sheet verifying he/she fully understands the details of their job, the energy isolation devices actuated, the locks and tags installed, and will then place their personal lock on the group lock box.

(2) When Affected Persons have completed their work assignments, they will sign off of the Master Tag Sheet and remove their personal lock from the group lock box.

(3) Affected Persons shall sign off of the Master Tag Sheet and remove their personal isolation lock from the group lock box at the conclusion of each work day.

(4) The Master Tag Sheet shall be kept in a central location under the control of the Issuing Individual or the PAI. For remote plants, the Master Tag Sheet shall be kept in a central location under the control of the PAI.

(5) Affected Persons will notify the PAI when signing on and off of the Master Tag Sheet.

(6) The PAI will notify all Affected Persons prior to the release or temporary removal of lockout/tagout devices.

(7) If for any reason an Affected Person's lock has not been removed from the lock box and the Affected Person is absent and it is deemed necessary to remove the lock, the following steps shall be followed:

(a) The PAI shall make every reasonable effort to contact the Affected Person and ensure they are no longer at the facility.

(b) The PAI shall notify the Responsible Official.

(c) The Responsible Official must remove or authorize removal of the Affected Person's personal lock from the lock box and notify The Chief of Hydropower for proper reporting through the chain of command and The Safety Office.

(d) The Issuing Individual or Designated Representative shall enter this action in the Station Log ink **Red Ink**.

(e) The PAI shall notify the Affected Person about the removal of the lock from the lock box when the Affected Person returns to the plant.

(f) The Affected Person must be re-informed by the PAI of the status of the clearance prior to signing the Master Tag Sheet and placing a lock on the lock box.

e. Temporary Protective Grounds (TPGs). TPGs, when required by the National Electrical Safety Code (NESC) or as specified in coordination with a Safe Clearance Request, usually when working on equipment above 480 VAC, are considered as devices to dissipate energy and are considered part of the HEC procedures, but not part of the clearance.

(1) Requirements. The NESC shall be used as a guide in grounding requirements.

(a) TPGs shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.

(b) TPGs shall have an impedance low enough to cause immediate operation of protective devices in case of accidental energizing of the electric conductors or circuit parts.

(c) The PAI and Issuing Individuals shall ensure that the proper protection (Protective Relays, Circuit Breakers, etc.) is operational prior to the placement of the TPGs.

(d) The Issuing Individual will retain the TPG tags when they are not in use. At remote sites, the TPG tags shall be kept in the control room when they are not in use.

(2) Placement. TPGs are placed after the Safe Clearance is accepted and are not considered part of the clearance. Locks are not required on TPGs. The following procedure shall be followed:

(a) Safe clearance is issued to the PAI.

(b) PAI makes a request to the Issuing Individual that TPGs be placed.

(c) Affected Persons shall be notified of the placement of grounds, if applicable.

(d) All TPGs shall be place by or under the **DIRECT** supervision of an Electrically Qualified Person.

(e) TPG tags are placed by the Issuing Individual or Designated Representative. TPG tags are accounted for by location and number and associated with the clearance. A TPG tag shall be placed on each TPG conductor such that it is visible and not likely to be damaged. **NOTE**: The PAI cannot be the Designated Representative in this step.

(f) The Issuing Individual or Designated Representative shall record the placement of the TPGs in the station log in **Green Ink**.

(g) The Issuing Individual or Designated Representative shall record the placement of the TPGs in the TPG Log. The TPG Log shall be kept with the Safe Clearance Order form.

(h) Affected Persons shall initial acceptance for each ground on the TPG Log.

(3) Removal. TPGs are removed prior to the release of the associated Safe Clearance as per the following:

(a) PAI makes a request to the Issuing Individual that TPGs be removed.

- (b) PAI notifies all Affected Persons that TPGs will be removed.
- (c) Affected Persons shall initial for the removal of each ground on the TPG Log.
- (d) Issuing Individual or Designated Representative removes TPG tags.

(e) All TPGs shall be removed by or under the **DIRECT** supervision of an Electrically Qualified Person.

(f) The Issuing Individual or Designated Representative shall record the removal of the TPGs in the station log in **Green Ink**.

(g) The Issuing Individual or Designated Representative shall record the removal of the TPGs in the TPG Log.

f. Temporary Lifts.

(1) In situations where locks and tags must be temporarily removed from the energy isolating device and the system energized for testing or repositioning purposes, the action must be fully coordinated in advance with the Issuing Individual. If more than one Safe Clearance is issued or there are overlapping Safe Clearances, the Issuing Individual shall coordinate the action with all PAIs.

(2) Temporary Removal. Upon coordination with the Issuing Individual, the procedures below shall be followed in sequence:

(a) Insure area is clear of tools and equipment.

(b) Notify all Affected Persons and have them remove their personal protective locks from the lock box and sign off of the Master Tag Sheet.

(c) The Issuing Individual or Designated Representative shall record the temporary lift in the Clearance Card Log. The PAI must sign the action on the Clearance Card Log stating that all Affected Persons have been notified of the card action.

(d) Remove TPGs as appropriate.

(e) The PAI shall remove their personal protective lock from the group lock box and retrieve the System Isolation Lock Key(s).

(f) PAI shall remove the System Isolation Lock(s).

(g) Issuing Individual or Designated Representative shall remove the Auxiliary Hold Card(s) and shall place them inside the lock box.

(h) Upon removal of the tag(s), the following data will be entered in the Station Log in **Red Ink**:

- 1. Safe clearance number;
- 2. Clearance tag number;

3. Date and time (in military time) of removal;

4. Names of Issuing Individual and PAI.

(i) The PAI shall return the system isolation lock key(s) to the group lock box and affix a personal isolation lock to the group lock box.

(j) The PAI shall log the changes on the Master Tag and inform the affected personnel of changes.

(k) Affected Persons shall sign the Master Tag Sheet and place their personal isolation lock on the group lock box before returning to work.

(1) All operation of equipment temporarily removed from the Safe Clearance shall be coordinated with the PAI.

(3) Replacement. Upon coordination with the Issuing Individual, issuance of Auxiliary Hold Card(s) not initially issued with the Safe Clearance or re-issuance of the Auxiliary Hold Card(s) after being temporary lifted shall follow the procedures below in sequence:

(a) Notify all Affected Persons and have them remove their personal isolation locks from the lock box and sign off of the Master Tag Sheet.

(b) The Issuing Individual or Designated Representative performs the energy isolation procedures as specified below. **NOTE**: items 1 and 2 below may be performed in any order as determined safe by the Responsible Official.

1. The Issuing Individual or Designated Representative performs the energy isolation procedures as per the switching order, if applicable, and applies locking devices and clearance tags. If utilizing a Designated Representative, the Designated Representative shall notify the Issuing Individual prior to the start and immediately following completion of switching order and log this in red in the station log book.

2. The Issuing Individual or Designated Representative performs the energy isolation procedures for the isolation points not listed on the switching order, applies locking devices and clearance tags. If utilizing a Designated Representative, the Designated Representative shall notify the Issuing Individual prior to the start and immediately following completion of clearing operations.

3. The Issuing Individual or Designated Representative shall notate on the Auxiliary Hold Card who the tag was placed by.

4. The PAI cannot be the Designated Representative while the clearance is being issued or held.

(c) The PAI shall check each detail for accuracy and shall assure that energy isolating devices are properly positioned and tagged. The PAI will then place System isolation locks on each lockable energy isolation device. The PAI shall verify the effectiveness of isolation.

(d) Once the PAI has accomplished locking of the energy isolation devices, the PAI will place the System isolation lock key(s) into a group lock box and secure the lock box with their personal lock. The PAI maintains control of the key belonging to their personal lock on the lock box. This lock shall remain in place for the duration of the clearance.

(e) The Issuing Individual or Designated Representative shall record the placement in the Station Log and Clearance Card Log. The PAI must sign the action on the Clearance Card Log stating that all Affected Persons have been notified of the card action.

g. Completion of Work. Before System Isolation Locks and Tags are removed and energy is restored to the system, the following actions shall occur:

(1) The work area shall be inspected by the PAI and Affected Persons to assure nonessential items have been removed from the system and the system components are operationally intact;

(2) If placed, remove TPGs according to the procedure in this Regulation;

(3) Affected Persons will sign off of the Master Tag Sheet and remove their personal protective locks from the lock box;

(4) All employees shall physically clear the area.

h. Releasing a Clearance. When releasing a safe clearance, the procedures below shall be followed in sequence:

(1) The PAI shall notify the Issuing Individual that all work is complete and the equipment is ready to be returned to service.

(2) The PAI shall remove their personal isolation lock from the group lock box and retrieve the System Isolation Lock Key(s).

(3) The PAI shall release the clearance to the Issuing Individual. The PAI will sign the Safe Clearance Order form releasing the clearance. At remote sites, the Safe Clearance Order form will be kept in the control room or main dispatch point and transmitted by electronic means. When electronic means are not available at remote sites, the clearance may be released verbally and the Issuing Individual will sign the Safe Clearance Order form for the PAI.

(4) Upon release of the safe clearance, the following data will be entered in the station log in **Red Ink**:

(a) Safe clearance number;

(b) Date and time (in military time) of release;

(c) Names of Issuing Individual and PAI releasing the safe clearance;

- (d) Clearance released verbally at remote site, if applicable.
- (e) Stamp clearance released across the Clearance issued stamp.

(5) Upon release of the safe clearance, the word "RELEASED" shall be written or stamped across the Safe Clearance Order form.

(6) The PAI shall remove all System Isolation Locks.

(7) The Issuing Individual or Designated Representative shall perform the procedures as specified below to return the equipment to service. **NOTE**: items (a) and (b) may be performed in any order as determined safe by the Responsible Official.

(a) The Issuing Individual or Designated Representative shall remove the tags and locking devices and return equipment to its proper operating position as per the switching order, if applicable. A Designated Representative if used, shall notify the Issuing Individual prior to the start and immediately following completion of switching order. The time the switching order was issued shall be logged in **Red Ink** in the station log book.

(b) The PAI can be the Designated Representative and may perform this step at the same time the isolation locks are being removed.

i. Transfer of a Clearance

(1) Transfer of a clearance is permitted from PAI to an Authorized Individual that is listed in the HEC Program Authorization Form.

(2) The PAI receiving the safe clearance shall check each detail for accuracy and shall assure that energy isolating devices are properly positioned, tagged and locked, and TPGs are placed according to the Temporary Protective Ground Log.

(3) Upon transfer of the safe clearance, the following data will be entered in the Station Log in **Red Ink**:

(a) Safe clearance number;

- (b) Date and time (in military time) of transfer;
- (c) Names of Issuing Individual and PAI receiving the safe clearance;

(d) Clearance transferred verbally at remote site, if applicable.

(4) The Issuing Individual shall record the transfer in the Transfer Log. The PAI transferring the clearance and the PAI receiving the clearance must sign accepting the transfer on the Transfer Log.

(5) Transfer of a Safe Clearance when the PAI is absent and can be contacted. In the event the PAI is absent from work and can be contacted, the clearance can be transferred by following these steps:

(a) The Issuing Individual shall notify the Responsible Official.

(b) The Responsible Official must authorize a transfer of the clearance to the Issuing Individual or another PAI. The Responsible Official must remove or authorize removal of the PAI's personal lock from the lock box.

(c) The Issuing Individual will follow the transfer clearance procedures in paragraph 2.i (1)-(4) above. The transfer of the clearance verbally and the Responsible Official approval shall be entered in the Station Log in addition to the requirements in paragraph 2.i (3). The Responsible Official must sign the Transfer Log in place of the PAI transferring the clearance.

(6) Transfer of a Safe Clearance when the PAI is absent and cannot be contacted. In the event the PAI is absent from work and cannot be contacted, the clearance shall be assumed by the Issuing Individual by following these steps:

(a) The Issuing Individual shall make all reasonable efforts to contact the PAI to obtain permission to transfer the safe clearance.

(b) The Issuing Individual shall notify the Responsible Official.

(c) Verification must be documented in the Station Log by the Issuing Individual that the PAI that applied the device is not at the facility.

(d) The Responsible Official must remove or authorize removal of the Affected Person's personal lock from the lock box and notify The Chief of Hydropower for proper reporting through the chain of command and The Safety Office.

(e) The Issuing Individual shall transfer the safe clearance to the new PAI. The Issuing Individual will follow the transfer clearance procedures in paragraph 2.i (1)-(4) above. The transfer of the clearance without PAI contact and the Responsible Official approval shall be entered in the Station Log in addition to the requirements in paragraph 2.i (3). The Responsible Official must sign the Transfer Log in place of the PAI transferring the clearance.

(f) The Issuing Individual shall advise the person to whom the clearance is to be transferred about assuming the responsibility of the scope of the safe clearance, the work already performed and the work to be performed.

(g) The original PAI shall be informed about the status of the associated clearance prior to resuming work at the facility.

j. Adding Safe Clearance Points to a Clearance. Adding new safe clearance tags to a clearance shall follow the procedures in paragraph 2.f (3). The new safe clearance point shall be added to the Safe Clearance Order form, Restore to Service, Master Tag, and Clearance Card Log.

k. Removing Safe Clearance Points from a Clearance. Safe clearance points can be removed individually without releasing the entire clearance. Upon coordination with the Issuing Individual, the procedures below shall be followed in sequence:

(1) Insure area is clear of tools and equipment.

(2) Removal of personnel from the area, if applicable.

(3) Notify all Affected Persons and have them remove their personal locks from the lock box and sign off the Master Tag Sheet.

(4) Remove TPGs as appropriate.

(5) The PAI shall remove their lock from the group lock box and retrieve the System isolation lock key(s).

(6) PAI shall remove the isolation lock. The PAI shall return the System isolation lock key(s) to the group lock box and affix a personal lock to the group lock box.

(7) Affected Persons shall sign the Master Tag Sheet and place their personal lock on the group lock box before returning to work.

(8) Issuing Individual or Designated Representative shall remove the Auxiliary Hold Card(s). Note: The PAI cannot be the Designated Representative in this step.

(9) Upon removal of the tag, the following data will be entered in the Station Log in **Red Ink**:

(a) Safe clearance number;

(b) Clearance tag number;

(c) Date and time (in military time) of removal;

(d) Names of Issuing Individual and PAI removing the auxiliary hold card;

(10) The Issuing Individual shall record the removal of the auxiliary hold card in the Clearance Card Log. The PAI must sign the action on the Clearance Card Log stating that all Affected Persons have been notified of the card action. The Issuing Individual or Designated Representative shall amend the Safe Clearance Order form striking the auxiliary hold card out in red ink. The PAI shall initial this change.

I. Remote Facilities. At remote facilities, all logs/forms (except Station Log entries) may be completed by the PAI and transmitted electronically to the Issuing Individual. Note that the coordination between PAI and Issuing Individual is required as identified in all steps of this procedure.

2. <u>SINGLE POINT LOCKOUT/TAGOUT WITHOUT A CLEARANCE.</u>

a. Requirements.

(1) Outage of the equipment does not affect the mission of the plant;

(2) The equipment has a single energy source that can be readily identified and isolated;

(3) The isolation and locking out of that single energy source with a personal lock will completely de-energize and deactivate the equipment and achieve a locked-out condition;

(4) Equipment is on a system rated at 480-volt or lower;

(5) The operation or work to be accomplished is limited to one shift and one work crew.

(6) The equipment has no potential for stored or residual energy or accumulation of stored energy after shutdown which could endanger employees.

(7) The servicing and maintenance does not create hazards for other employees.

b. Procedures.

(1) The Authorized Individual shall notify the Issuing Individual of the need for a single point lockout/tagout without a clearance.

(2) The Authorized Individual shall perform the switching and apply their personal lock and tag.

(3) Tests shall be made to verify the effectiveness of the energy isolation.

(4) All Affected Persons shall then apply their personal lock and tag.

(5) Upon completion of the work, all Affected Persons shall remove their personal lock and tag.

(6) The Authorized Individual shall remove their personal lock and tag and perform the switching to return the equipment to service. The Authorized Individual shall notify the Issuing Individual that the equipment has been returned to service.

(7) The Issuing Individual shall document the following in the Station Log in red ink:

(a) The equipment being removed from service. Note: For lighting and receptacle circuits, one entry can be made for the entire system;

(b) The Authorized Individual;

(c) Start and end times and date.

3. <u>MULTIPLE POINT LOCKOUT/TAGOUT WITHOUT A CLEARANCE</u>.

a. Requirements.

- (1) Outage of the equipment does not affect the mission of the plant.
- (2) Equipment is on a system rated at 480-volt or lower;
- (3) Maximum of four isolation points;
- (4) The operation or work to be accomplished is limited to one shift and one work crew.

(5) The equipment has no potential for stored or residual energy or accumulation of stored energy after shutdown which could endanger employees.

(6) One personal lock and personal tag per worker per isolation point;

(7) The equipment has no potential for stored or residual energy or accumulation of stored energy after shutdown which could endanger employees;

(8) The servicing and maintenance does not create hazards for other employees.

b. Designation. The Responsible Official may designate certain equipment in writing to be removed from service without a safe clearance if all requirements above are met. The Responsible Official shall:

- (1) Designate the equipment in writing on the Equipment Authorization Form.
 - (a) Prefix to the Switching Permit Number shall be SP.

(b) Switching Permit Number shall be sequential beginning with the number one.

(2) Complete the Switching Permit for the piece of equipment. This form includes the step by step procedure for removal from service and return to service.

(3) Complete an Activity Hazard Analysis for this piece of equipment that identifies all sources of hazardous energy.

(4) Include all of these documents within the HEC program documents.

c. Procedures.

(1) The Authorized Individual shall make a request to execute a Switching Permit to the Issuing Individual.

(2) The Issuing Individual shall verify the equipment is listed on the Equipment Authorization form and a Switching Permit and Activity Hazard Analysis is included in the HEC program documents. Once verified, the Issuing Individual may approve the request.

(3) The Authorized Individual shall perform the switching according to the procedure on the Switching Permit and apply their personal locks and personal tags.

(4) All Affected Persons shall then apply their personal locks and personal tags.

(5) The Issuing Individual shall document the following in the Station Log in red ink:

- (a) The Switching Permit Number;
- (b) The Authorized Individual;
- (c) The equipment being removed from service;
- (d) Start time and date.

(6) Upon completion of the work, all Affected Persons shall remove their personal locks and personal tags.

(7) The Authorized Individual shall remove their personal locks and personal tags and perform the switching to return the equipment to service according to the procedure on the Switching Permit. The Authorized Individual shall notify the Issuing Individual that the equipment has been returned to service.

- (8) The Issuing Individual shall document the following in the Station Log in red ink:
 - (a) The Switching Permit Number;

- (b) The Authorized Individual;
- (c) The equipment being returned to service;
- (d) End time and date.

4. <u>CAUTION ORDERS</u>. Caution Orders shall not be used to provide personal protection but instead are issued to direct attention to abnormal, hazardous, unusual conditions or for special operating instructions to be followed.

a. Caution Order Identification Number. Each Caution Order shall be assigned a unique identification number. The identification scheme shall be X-Plant-YY-ZZ. Plant may be an abbreviated designation for the Hydropower Facility (e.g. Eufaula Power Plant – EUF). ZZ shall be sequentially numbered annually beginning with 01.

b. Requesting a Caution Order.

- (1) Any employee in the Hydropower facility may request a caution order.
- (2) The request is made to the Issuing Individual verbally.

(3) The Power Company Dispatcher may request a caution order associated with a line or its equipment.

c. Issuing a Caution Order.

(1) The Issuing Individual will fill out an ENG Form 1928, Caution Order Record and ENG Form 1924, Caution Order Tag. The Caution Order shall be issued to an Authorized Individual. If the Caution Order is for a remote site, the Authorized Individual may fill out the tag and will have a duplicate ENG Form 1928. Caution Orders may be issued to the Shift Operator position.

(2) The Issuing Individual, or any Authorized Individual, at the Issuing Individuals request, may affix the Caution Order Tag.

(3) The individual the Caution Order is being issued to will sign ENG Form 1928 accepting the Caution Order. At remote sites, the ENG Form 1928 will be kept in the control room or main dispatch point and transmitted by electronic means. When electronic means are not available at remote sites, the Caution Order may be issued verbally and the Issuing Individual will sign the ENG Form 1928 for the individual receiving the Caution Order.

(4) Upon issuance of the caution order, the following data will be entered in the station log in **Black Ink**:

(a) Caution order number;

- (b) Equipment caution order issued on;
- (c) Purpose of the caution order;
- (d) Date and time (in military time) of issue;

(e) Names of Issuing Individual and Authorized Individual receiving the caution order;

(f) Caution order issued verbally at remote site, if applicable.

d. Releasing a Caution Order.

(1) The Individual the Caution Order was issued to will notify the Issuing Individual that the Caution Order is ready to be released.

(2) The Individual the Caution Order was issued to will sign the ENG Form 1928 releasing the Caution Order. At remote sites, the ENG Form 1928 will be kept in the control room or main dispatch point and transmitted by electronic means. When electronic means are not available at remote sites, the Caution Order may be released verbally and the Issuing Individual will sign the ENG Form 1928 for the Individual releasing the Caution Order.

(3) Upon release of the caution order, the following data will be entered in the station log in Black Ink:

- (a) Caution order number;
- (b) Date and time (in military time) of release;

(c) Names of Issuing Individual and Authorized Individual releasing the caution

order;

(d) Caution order released verbally at remote site, if applicable.

(4) The word "RELEASED" shall be written or stamped across the ENG Form 1928 in large, bold **BLACK** letters;

(5) The Issuing Individual or any Authorized Individual, at the Issuing Individuals request, will remove the Caution Order Tag.

e. Outstanding Caution Orders. Outstanding Caution Orders shall be reviewed at least every six months by the Issuing Individual to insure the Caution Order is still needed.

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APPENDIX C

TRAINING REQUIREMENTS

1. <u>INITIAL TRAINING</u>. Employees involved with HEC procedures shall have initial training and must demonstrate adequate working knowledge of HEC program, procedures and policies prior to placement on the list of Issuing and Authorized Individuals.

a. Training shall be provided to ensure that all personnel understand the control of hazardous energy and the HEC program and that the knowledge and skills required for the safe application, use, and removal of energy controls are acquired. This training shall be provided for all new employees as part of the new employee orientation and shall be followed by a written assessment.

b. The HEC program and procedures shall be covered in detail in the SWT Hydropower Training Program for all Hydropower Trainees.

c. All Authorized and Issuing Individuals shall be instructed in the purpose and use of the HEC program and procedures. The training shall be followed by a written assessment. Employees must pass the assessment to become qualified as an Authorized or Issuing Individual. The training shall include:

(1) The type and magnitude of energy present in the workplace.

- (2) Recognizing hazardous energy sources that apply.
- (3) Methods and means to isolate control energy.
- (4) The requirements of the HEC program.

d. All Affected Persons shall be instructed in the purpose and use of the HEC program and procedures. The training shall be followed by a written assessment. Employees must pass the assessment to become an Affected Person. Affected Persons must be trained to:

(1) Recognize HEC locks and tags.

(2) Understand the prohibition against attempting to restart or re-energize a machine, circuit or any equipment that is removed from service by implementation of a HEC procedure.

(3) When tagout alone procedures are used, personnel shall be trained in the limitations of tags.

<u>RETRAINING</u>. Retraining for employees involved with HEC procedures shall be provided:

 a. At least annually and followed by a written assessment. Employees must pass the assessment to remain qualified as an Authorized Individual, Issuing Individual or Affected Person.

b. When a periodic inspection reveals deviations from procedures or inadequacies in knowledge or use of HEC procedures.

c. When there is a change in job assignment, a change in hazards, or a change in the HEC program.

3. <u>INCIDENTAL PERSON TRAINING</u>. Training for Incidental Persons (visitors and/or other employees who may be in an area where energy control procedures are being used) must include instruction regarding HEC procedures and the prohibition against removing a lockout or tagout device and attempting to restart, re-energize, or operate the machinery.

a. This instruction can be provided during new employee orientations, by use of employee handbooks, or through safety meetings and must convey the purpose of the HEC Program and the program's prohibitions, to include the understanding that personnel are not to touch any locks, tags, energy isolation devices, or equipment covered by this program.

b. This instruction is required for all personnel not classified as Authorized or Affected employees.

c. This training is not required if an employee or group of designated employees/personnel are prohibited from being in an area where servicing or maintenance is performed pursuant to an energy control procedure (i.e., office/administrative personnel who are prohibited from going into production areas where all servicing and maintenance activities are performed. This training would be required for a salesperson that sometimes enters production areas to discuss product specifications associated with a particular order while servicing or maintenance work may be being performed).

4. <u>WRITTEN ASSESSMENT</u>. Uniform tests will be used for all written assessments. The tests will be multiple choice and/or true-false in make-up and will be used both by the employee and Responsible Official to assess knowledge. A District team will develop the tests. A passing grade of **90%** on the assessment is required. All individuals must pass the written assessment prior to being named as an Authorized or Issuing Individual by the Responsible Official. All individuals must pass the written assessment for Affected Persons prior to being allowed to work as an Affected Person.

5. <u>DOCUMENTATION</u>. All training and retraining documentation shall be maintained at the project for at least two years. Certification of training/assessments shall contain employees' names, employees' signatures, date/time/location of training, instructor's name(s) and outline of training content.

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APPENDIX D

Line Clearances

1. <u>REQUESTING A LINE CLEARANCE</u>

a. The Principal Authorized Individual will submit a Clearance Request to the Master Plant Controller, identifying the same information as described in the HEC Procedural steps Appendix B Section 2.

b. The Master Plant Controller will identify the clearance points required and submit the request to the Power Operations Specialist (Transmission) or an authorized representative at least 14 days prior to the date the clearance will be required. The Master Plant Controller, Principal Authorized Individual and Power Operations Specialist (Transmission) shall all agree on the clearance points on all applicable line terminals.

2. ISSUING A LINE CLEARANCE

a. Before a Line Clearance can be issued, a Line Terminal Clearance must be issued for all outbound line terminals. The System Dispatcher will prepare the switching order for all outbound terminals. All outbound terminal switching orders will be checked by a second System Dispatcher, if possible. The Master Plant Controller will prepare a switching order for the local line terminal. All local line terminal switching orders should be checked by a second Master Plant Controller or Designated Representative and the Principal Authorized Individual.

b. Every person involved in placing and issuing the clearance shall analyze the Switching Orders for correctness. If there are any questions regarding the completeness or correctness of the Switching Order, they shall be resolved before switching begins. If questions arise during switching, the question should be resolved before proceeding

c. The Line Terminal Clearance can only be issued to the Master Plant Controller or the System Dispatcher.

d. The System Dispatcher will request terminal clearances for all outbound terminals on the line.

e. Outbound Terminal Clearances must all be issued before a Line Clearance can be issued.

f. The System Dispatcher will issue an outbound terminal clearance to the Master Plant Controller. At the Master Plant the Controller shall log "Clearance Received" in the station log book

g. The Master Plant Controller shall inform the Designated Representative to start switching the line clearance using the same number issued by the System Dispatcher Suffixed with a Capital "A".

h. The Designated Representative shall complete the switching to remove from service, place tags and notify the Principal Authorized Individual that confirmation may begin.

i. The Principal Authorized Individual, accompanied by the Designated Representative, shall confirm the switching using the Safe Clearance Confirmation Sheet and place locks.

j. After confirmation from the Principal Authorized Individual and the Designated Representative, the Master Plant Controller shall state to the PAI receiving the line clearance exactly what protection has been provided and issue a line clearance to the PAI.

k. The Master Plant Controller shall stamp and log in red "Clearance Issued" and "Clearance Received" in the station log book and the PAI will sign it.

I. At remote locations the Designated Representative will log "Clearance Received" in the station log book and the Principal Authorized Individual will sign it.

m. The PAI will place the System Lock Key in the lock box and place their personal lock on the lock box. It shall remain in place for the duration of the clearance.

n. Personal protective grounds shall be placed in accordance with Appendix B before any work is allowed to begin.

o. The Clearance Procedures for notification and signing on to the Master Tag in accordance with Appendix B shall be followed.

3. Limits of the Clearance

a. Under this line clearance, work shall be limited to the local line equipment only. If work is required at locations other than the local line terminal, additional clearances must be issued.

b. If it is necessary to energize the equipment under clearance at a source of Principal System Energy for testing or checking purposes, before work is completed, all clearances shall be released, all personal protective grounds shall be removed and the test made.

c. A new clearance shall be requested and issued before work can continue. ONCE A CLEARANCE HAS BEEN RELEASED IT CAN NOT BE RE-ISSUED.

4. <u>RELEASING LINE CLEARANCES</u>

a. Before the clearance can be released all personal protective grounds shall be removed in accordance with Appendix B.

b. All Affected Personnel shall sign off of the Master Tag and remove their personal locks from the Group Lock Box.

c. The Principal Authorized Individual shall state to the Master Plant Controller that all personnel are in the clear, all personal grounds have been removed and that the equipment is in safe operating condition. If these conditions cannot be met, the Principal Authorized Individual shall provide the detail of conditions to the Master Plant Controller.

d. The Line Clearance may be released at this time.

e. At the Remote Plant, the Designated Representative shall log "Clearance Released" in the station log book and the Principal Authorized Individual acting for the Master Plant Controller will sign.

f. At the Master Plant, the Controller will log "Clearance Released" in the Master Plant Log Book.

g. Upon releasing a clearance, the word "Clearance Released" shall be written or stamped across the corresponding log entries of "Clearance Issued" in **Red Ink**.

h. The Master Plant Controller shall direct the Designated Representative to properly complete the switching to restore the local terminal.

i. The Designated Representative shall complete the switching to restore to service, remove tags and locking devices then notify the Principal Authorized Individual Acting for the Master Plant Controller that confirmation may begin.

j. The Principal Authorized Individual accompanied by the Designated Representative will confirm the switching using the Safe Clearance Confirmation Sheet.

k. The Designated Representative shall inform the Master Plant Controller that switching has been confirmed.

I. After receiving verification that the Line Clearance switching has been completed, the Master Plant Controller shall release the outbound Terminal Clearance to the System Dispatcher.

m. The Master Plant controller shall log Terminal Clearance released in the master plant log book.

5. <u>ENERGIZING THE LINE</u>

a. All Line Power Circuit Breaker closures shall be coordinated with the System Dispatcher. Plant Standard Operating Procedures shall be followed at all times

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APPENDIX E

OUTSIDE/CONTRACTOR PERSONNEL

1. <u>PERSONNEL PROTECTION</u>. When non-USACE personnel perform construction or maintenance at USACE operated facilities and are exposed to hazardous energy, the non-USACE employees shall also be protected by HEC procedures.

2. <u>OUTSIDE/CONTRACTOR PERSONNEL PROCEDURES</u>. Outside/Contractor Personnel shall be protected by HEC procedures. Outside/Contractor Personnel in Hydropower facilities must work under a USACE controlled safe clearance as affected persons. Requirements for this procedure are listed below.

a. All outside/contractor personnel must meet all affected persons requirements as covered in this regulation.

b. The Responsible Official shall establish a procedure for the contractor to follow concerning the group lock box and Master Tag Sheet. At a minimum:

(1) One contractor employee must sign on/off the Master Tag Sheet that is kept in a central location under the control of the Issuing Individual or the PAI, and lock on/off the group lock box that is under the control of the PAI;

(2) All other contractor employees must sign on/off a Master Tag Sheet. This may be a second Master Tag Sheet that is under the control of the contractor employee that is signing on/off the main Master Tag Sheet;

(3) All other contractor employees must lock on/off a group lock box. This may be a second group lock box that contains the key from the lock that the contractor employee used to lock on/off the group lock box that is under the control of the PAI.

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APPENDIX F

PERIODIC INSPECTIONS AND PROGRAM REVEW PROCEDURES

1. <u>PURPOSE</u>. This appendix defines the process and procedures used to ensure that the HEC program is implemented properly, that employees are familiar with their responsibilities and any deviations, weaknesses or potential weaknesses in the program or procedures are identified and corrected.

2. <u>**RESPONSIBILITY</u>**. The Tulsa District Chief of Hydropower shall ensure the periodic inspections are performed for the HEC program. The Responsible Official shall ensure the periodic inspections are performed concerning the execution of the HEC program at their facility.</u>

3. <u>SCOPE</u>. This document establishes the inspection process and programmatic review of the SWT HEC program. The periodic inspection procedure establishes the requirements for the control of hazardous energy to be used by all personnel in the performance of their duties.

4. <u>HEC PROGRAM INSPECTION AND REVIEW.</u> An evaluation of the HEC program is required annually. The Tulsa District Chief of Hydropower will appoint a team to conduct the inspection. The team will be made up of individuals knowledgeable in the HEC program and include at least one Qualified Person. The purpose of this review is to ensure the HEC program meets regulatory standards. Documentation for the periodic inspection will be kept on file by the Tulsa District Chief of Hydropower a copy of the HEC Program Inspection Checklist is included in Appendix G.

5. <u>IMPLEMENTATION INSPECTION AND REVIEW</u>. An evaluation of the implementation of the HEC program at each facility is required annually. There are two types of inspections. An internal inspection and an external inspection. These inspections will alternate each year. All inspections must be conducted by individuals knowledgeable in the HEC program and include at least one Qualified Person. A copy of the HEC Facility Inspection Checklist is included in Appendix G and shall be completed for both types of inspections.

6. Internal Inspection. Internal inspections may not include any person that uses the local facilities HEC procedures. If there are no such individuals at the facility, the Responsible Official may perform the internal inspection, otherwise the Tulsa District Chief of Hydropower will appoint an individual(s) to conduct the inspection.

7. External Inspection. The Tulsa District Chief of Hydropower will appoint the teams to conduct the external inspections. The team will be made up of individuals knowledgeable in the HEC program and include at least one Qualified Person

- a. Inspection Requirements.
 - (1) Shall include one lockout/tagout without a clearance.

- (2) Shall include one safe clearance in progress.
- (3) Shall include interviews of individuals involved in the safe clearance.
- (4) External inspections shall include interviews with all employees that use the HEC program to ensure they understand their responsibilities under the procedures.
- (5) External inspections shall include interviews with incidental employees at that facility to ensure they understand their responsibilities under the procedures.
- (6) Shall be documented on the HEC program Internal/External Inspection Checklist. Documentation shall include deficiencies noted and required corrective actions.
- (7) Documentation shall be kept on file at the facility.
- 8. Copies of the documentation shall be submitted to the Tulsa District Chief of Hydropower

9. Violations. All violations of the HEC Program shall be immediately reported to the Responsible Official. Violators shall be subject to appropriate administrative disciplinary action. The Responsible Official shall notify the Tulsa District Chief of Hydropower. A summary of all violations shall be submitted to the Tulsa District Chief of Hydropower at the end of each Quarter.

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APPENDIX G

FORMS

Figure 1. ENG Form 1925, Main/Auxiliary Hold Card (Reproduced on RED STOCK) Danger - Do Not Operate.

STATIO CLEAR/ CLEAR/ ISSUED ISSUED DATE	DEPARTMENT OF THE ARMY	DF OF ENGL CANGER DANGER IOT OPER/ IN HOLD CARD CARD	PS OF NEERS ATE	CARD NO. CAR
CADD	AUXILIA	RY CARD PLACE	MENT	
NO.	BY	LUCATION	BY	
2				
3			-	
_ 4			-	
_ 5	-			GROUNDS PLACED AT
6	6			(FOR USE WITH MAIN CARD DNLY)
7			_	
8				
9				
ENG FOR	M 1925, Aug 94 PREV	10US EDITIONS ARE OBSOLE	TE	

Figure 2. ENG Form 1924, Caution Order Card (Reproduced on Yellow Stock).

ENG	ORN	ARTI THE M 19	ARN 24, A	T OF IY UG	94	0	E	ORPS	OF	
REMOVED BY	ORDERED OFF BY	U RELEASED BY	PLACED BY	O ORDERED ON BY	N REQUESTED BY	OSIGNATURE	WAIT MINUTES BEFORE RECLOSING	SPECIAL INSTRUCTIONS	CAUTION HAZARDS	CAUTION ORDER NO.
						TIME				
						DATE				

CAL	JTION	
Conditions are abnormal or operated in an unusual ma comments on the front of the Use caution at all times. N without a signed record of	this equipment is nner. Operators whis card and act a o operation shall time and date of	being vill read ccordingly take place the action
SIGNATURE	TIME	DATE
		_

Figure 3. Personal Protective Ground Tag (Green) (Example).



This is an example of a tag that may be used to identify and account for temporary protective Grounds (TPGs). A TPG (Green) tag may be developed locally.

Figure 4. Personal Tag (Red) (Examples).





NOTE: Either type of personal tag may be used.

Figure 5. USACE Safe Clearance Request Form

·						
Section 1	LOCAFION	CORPS OF ENGINEERS SAFE CLEARANCE REQUEST ER 385-1-31	CLEARANCE NUMBER			
	AUTHORIZED INDIVIDUAL	ISSUING AUTHORITY				
	NAME/TITLE	NAME/TITLE	<u>.</u>			
	LOCATION/PHONE	LOCATION/PHON	E			
	DESCRIPTION OF SYSTEM AND HAZ	ARDS TO BE CLEARED	<u>.</u>			
	PURPOSE OF CLEARANCE		<u>.</u>			
	NAME AND LOCATION OF POINT OF	CONTACT	<u> </u>			
	ESTIMATED TIME/DATE FOR COMPLETION OF WORK;					
ESTIMATED TIME TO RETURN EQUIPMENT TO SERVICE IN AN EMERGENCY (HOURS):						
Section 2	PROCEDURAL STEPS FOR SHUTTING DOWN, ISOLATING, BLOCKING, AND SECURING SYSTEM TO CONTROL HAZARDOUS ENERGY					
	SEE SAFE CLEARANCE ORDER SHEET					
Section 3	PROCEDURAL STEPS AND RESPONSI DEVICES	BILITIES FOR PLACEMENT, REMOVAL, AND	TRANSFER OF LOCKOUT/TAGOUT			
	SEE SWITCHING ORDER TO REMOVE FROM SERVICE SHEET					
Section 4	PROCEDURAL STEPS AND RESPONSE UNTAGGING, PROTECTIVE GROUND SEE S	BILITIES FOR PLACING AND TAGGING, AND IS SWITCHING ORDER TO RESTORE TO SERVIC	MOVING OR REMOVING AND			
Section 5	TRANSMITTED TO SWPA:					
	BY:		TIME:			
Section 6	AUTHORIZED BY:	DATE;				
	CLEARANCE ISSUED TO	DATE;	TIME;			
	CLEARANCE RELEASED BY	DATE;				
	CLEARANCE REMOVED BY	. DATE;	TIME;			

Figure 6. Safe Clearance Order Sheet

U.S. ARMY CORPS OF ENGINEERS SAFE CLEARANCE ORDER SHEET

STATION: CLEARANCE NO: CLEARANCE COMPLETED BY:	_ UNAVAILAI AVAILABL HQURS UNAVAILABLE	BLE:// E://	; ;
EQUIPMENT TO BE CLEARED:			
PURPOSE OF CLEARANCE:			
CLEARANCE REQUIRED BY:		TIME:	:
CONTACT (LOCATION):		PHONE:	
ESTIMATED TIME OF COMPLETION:		HOURS:	
ESTIMATED TIME TO RETURN EQUIPMENT T	O SERVICE IN EMERGENCY	(HOURS)	

SWITCHING OR OTHER OPERATIONS REQUIRED FOR CLEARANCE:

CARD		
NO	PROCEDURE	SWITCH DESCRIPTION

NO.	GROUNDS PLACED AT	INITIALS	GROUNDS REMOVED	INITIALS

Figure 7. Switching to Remove From Service Form

U.S.ARMY CORPS OF ENGINEERS SWITCHING TO REMOVE FROM SERVICE

STATION:	SWITCHING ORDER NO:	
DATE://	TIME:	
DESIGNATED REPRESENTATIVE (NAME):		_
ISSUED BY:		
PURPOSE OF SWITCHING:	REMOVE FROM SERVICE	

SWITCHING TO BE PERFORMED

SEQ				CARD NO
NO	PROCEDURE	SWITCH NO.	TIME	

Safe Clearance Switching Order Format - To remove from Service

Figure 8. Switching to Restore to Service Form

	sw	J.S.ARMY CORPS O /ITCHING TO REST(F ENGINEERS DRE TO SERVICE		
	STATION:	SW	ITCHING ORDER NO:		
	DATE://		TIME::		
	DESIGNATED REPRESENTATIVE (NAME):				
	ISSUED BY:				
	PURPOSE OF SWITCHING:	D RESTORE TO SERV	/ICE		
	5	SWITCHING TO BE	PERFORMED		
SEQ					CARD
NO	PROCEDURE		SWITCH NO.	TIME	NO
					+
					+
					+
					1

Safe Clearance Switching Order Format - To restore to Service

Figure 9. Safe Clearance Confirmation Sheet

U. S. ARMY CORPS OF ENGINEERS SAFE CLEARANCE CONFIRMATION SHEET

STATION:	EQUIPMENT:
CLEARANCE NO:	PURPOSE:
ISSUED TO:	DATE:// TIME::
REMOVE CONFIRMED BY:	
RELEASED BY:	DATE:/ <u>TIME</u> :
RESTORE CONFIRMED BY:	

SWITCHING TO BE PERFORMED

CARD			REMOVE	RESTORE
NO	PROCEDURE	SWITCH DESCRIPTION	(INITIALS)	(INITIALS)

NO.	GROUNDS PLACED AT	INITIALS	GROUNDS REMOVED	INITIALS

CLEARANCE MASTER TAG SHEET				Sheet	of		
CLEARANCE NO.	DATE ISSUED:	DATE ISSUED:		ISSUED TO:			
Systems and Hazards to be Cleared:							
	Individual Affecte	d Persor	n Account	ability			
After fully comprehending the details of the job and the limits of this Safe Clearance, each Affected Person assigned MUST sign his/her name below AND enter the date, time and initials in the ON columns of this Master Tag before starting work under this Safe Clearance. Each Affected Person MUST ENSURE him/herself that the isolation points required to perform the work safely are appropriate and properly configured. Each Affected Person must enter the date, time, and initials in the OFF columns of this Master Tag upon completion of his/her work under this Safe Clearance. This Master Tag and all continuation sheets shall be attached to the Safe Clearance Order Sheet when it is released. All Affected Persons must be cleared OFF this Master Tag before the Safe Clearance can be released.							
Signature	Name: (Printed)	Sig	nature	N	lame: (P	rinted)	
Change of Status to th	e Safe Clearance:	Date	ON Time	Initials	Date	OFF Time	Initials

CLEARANCE	E MASTER TAG SHI	EET		Sheet	of		
CLEARANCE NO.	DATE ISSUE	D:		ISSUED TO):		
Systems and Hazards to be (Cleared:						
Change of Status to th	e Safe Clearance:	Date	ON Time	Initials	Date	OFF Time	Initial
				+			

Figure 11. Main Hold Card

DANGER DO NOT OPERATE MAIN HOLD CARD

STATION:			
CLEARANCE NO:		CARD NO:	1
CLEARANCE ON:			
ISSUED TO:			
ISSUED BY:			
DATE:		TIME.	
AU	XILIARY CARDS PLAC	ED AT	
CARD PLACED			REMOVED
NO BY	LOCATION		BY
I			
I	l		I
!	l		!
¦			¦
'			'
'	' <u></u>		'
			i
	1		
	I		I
	l		I
	l		!
l	l		!
'	·		'
i			i
I	I		I
I	l		I
!	l		!
	·		
			¦
'	'		·'
'	·		'
	I		i

Main Hold Card (Eng Form 1925) Figure 12. Auxiliary Hold Card

DANGER DO NOT OPERATE AUXILARY HOLD CARD

CLEARANCE NO:	CARD NO:
PLACED BY:	TIME:
ISSUED TO:	
EQUIPMENT HELD:	
GROUNDS PLA	ACED AT
(FOR USE WITH MAI	IN CARD ONLY)

Auxiliary Hold Card (Eng Form 1925 Back),

Figure 13. Caution Order Tag

DEPARTMENT OF	CORPS OF
THEARMY	ENGINEERS
CAUTION	ORDER TAG
CAUTION ORDER NO:	/LOG PAGES:
STATION:	
LINE OR EQUIPMENT:	
SPECIAL INSTRUCTIONS:	
SIGNATURE	E TIME DATE
	;
ORDERED ON BY:	;
	;//
REMOVED BY:	
OUTSTANL	DING CARD LISTING
TIME PLACED	TIME REMOVED INIT
	<u> </u>
	: :
	: :
	· · ·
	;;;;;
	· · ·
	;;;;;;

Abnormal Conditions Card (Eng Form 1924)

Figure 13. Caution Order

LOCATION	CORPS OF ENGINEERS	CAUTION OPDER NUMBER
warmen i Datti	CAUTION	CHO FOR OHDER NORDER
	ORDER	
	ER 385-1-31	
CAUTION ORDER REQUESTED BY		
NAMETITLE	(LOCATION/PHONE)	
REASON FOR CAUTION ORDER		
EQUIPMENT COVERED BY CAUTION ORDER		
CONDITIONS OR SPECIAL INSTRUCTIONS		
	NG SWITCH	
MINUTES BEFORE RECLOSI	officer of the second sec	
CAUTION ORDER TAG PLACED AT		
CAUTION ORDER ISSUED TO	DATE	TIME
CAUTION ORDER RELEASED BY	DATE	TIME
CAUTION ORDER TAG REMOVED BY		TIME
STOTION ONDER THE REMOVED BY	DATE	11000
NG FORM 1928-R, Aug 94	EDITION OF APR 51 IS OF	BSOLETE. (Preponent: CESO

Figure 14. Sample Designation Letter

Power plant Name Responsible Official : Insert Name Date of Issue: *Insert Date*

Issuing Individuals:

In accordance with ER 385-1-31, the *Insert Power plant Name* Senior Controller is authorized to issue safe clearances on all mainstream power plant equipment. The power plant superintendent (specialist) or his/her designee may issue clearances on non-mainstream power plant equipment.

The *Insert Power plant Name* Senior Controller is authorized to receive clearances issued by the SWPA System Controller.

Designated Representatives

In accordance with ER 385-1-31, the designated representative is authorized by the Responsible Official to act on behalf of the Issuing Individual as a switchman. The following personnel are authorized as the Issuing Authority Designated Representative. *Insert Names of Personnel*

Authorized Individuals

Personnel Authorized to Request and Receive Clearances on Mainstream Power Plant Equipment:

In accordance with ER 385-1-31, the following persons are authorized to receive safe clearances as part of the US Army Corps of Engineers "Safe Clearance Procedures" at <u>Insert Power plant</u> <u>Name</u>. 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 Hydropower Branch, the Master Plant Senior Controller and the Southwestern Power Administration (SWPA) dispatcher.

Insert Names of Personnel

Personnel Authorized to Remove Non-Mainstream Equipment From Service Under the Lockout/Tagout Provisions of the HECP:

Insert Names of Personnel

Affected Personnel

Personnel authorized to work under Safe Clearance, Lockout/Tagout. Insert Names of personnel

Responsible Official

Signature _____

Equipment	Authorization	Form

This form is to be completed by the Responsible Official. The equipment listed on this form is authorized to be removed from service without a clearance. The procedures for removing this equipment from service without a clearance must be followed.

Facility:	
Responsible Official:	
Switching Permit No.	Equipment Authorized for Removal

Figure 16. Switching Permit

Switching Permit

Fac	ility:
Swit	tching Permit Number:
Equ	ipment:
Rem	nove from Service Procedure:
1.	
2.	
3. ¯	
4	
5.	
6.	
7	
8	
9.	
10.	

Return to Service Procedure:

1				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10				

Special Instructions:

Figure 17.	Safe Clearance	Card Log Sheet
------------	----------------	----------------

Clearance	e Card L	og ^{Sheet}	of
Clearance No:	D	ate Issued:	Issued To:
Systems and Hazard	ds to be Cleared:		
Card Action	Card No(s)	DATE/TIME	PAI SIGNATURE
The Principal Authori Principal Authorized I action.	Principal A zed Individual mu Individual is stating	Authorized Indivio st sign this form fo g that all affected	dual Accountability or each card action. By signing this form, the persons have been notified of the pending card

Figure 18. Clearance Transfer Log

Transfer Log			Shee	Sheet of		
Clearance No:	Date Issued:	Issued To:				
Systems and Hazards to be Cleared	d:					
Transferred To (Name and Signature)	Transferred To (Name and Transferred From (Name and Signature) Signature)			DATE/TIME		
Principal Authorized Individual Accountability The Principal Authorized Individuals transferring and receiving the transferred clearance must sign this form for transfer action. By signing this form, the Principal Authorized Individual receiving the clearance is stating that the clearance has been inspected and it has been determined to be complete for the ongoing work. If the Principal Authorized Individual transferring the clearance is absent from the facility, the Responsible Official must sign for the Principal Authorized Individual.						

×			 		
			Date Placed	Clearand	
			Card No.	e No:	
			Ground Placed At	Date Issued:	Tempo
			Placed By	s	orary Pi
			Affected Persons	sued To:	rotective G
			Removed By	Systems	bround
			Affected Persons	and Hazards to be C	Log
			Date Removed	Cleared:	

Figure 19. Temporary Protective Ground Log

Figure 20. HEC Program and Facility Inspection Checklist

	HEC PROGRAM INSPECTION	N CHECKLIST	Date of Ins	pection:	
	US Army Corps of Engineers –	Tulsa District			
Con	tact Name / Position:	Contact Phone No:			
Auth	orized Employee(s) Inspecting:	Authorized Employee Inspector(signati	ure):		
	· · · · · · · · · · · · · · · · · · ·		- /		
Note	e: If <u>Non-Applicable</u> or <u>Deficient</u> is checked, explain in (detail under remarks section.	-	-	
				Deficient	
	NOTE: Safety and Health Requirements Manual (EM3	85-1-1 (Sept. 08)) references in	Satisfacto	(⊏xpiain in	N
	parentheses.		ry	Remarks	A
)	
1	Have there been any regulatory changes since the previous	ous inspection?			
2	If yes to question 1, have these changes been incorporate	ted into the HEC program?			
3	Does the HEC program comply with ER 385-1-31?				
4	Does the HEC program comply with EM 385-1-1?				
5	Does the HEC program comply with 29 CFR 1910.147 a	nd 29 CFR 1910.269?			
6	Does the HEC program comply with 29 CFR 1910.333?				
7	Are all incidental personnel required to be informed of the to restarting or reenergizing systems which are locked or	e procedures and prohibitions relating tagged out? (12.B.01)			
8	When tagout systems are used (ONLY when lockout is n to be trained in the limitations of tags? (12 B 01)	ot possible), are employees required			
	Is annual training required to be provided to all employee	es to ensure that the purpose and the			
9	function of the energy control procedures are understood	and that the knowledge and skills			
	required for the safe application and removal of energy c (1910 147(c)(7))(1910 269(a)(2))	ontrols are acquired?			
	Are employees required to be re-trained when there has	been a change in their job			
10	assignments, a change in process that presents a new h	azardous energy control hazard, or			
	when there has been a change in the HEC procedure? (12.B.01)			
11	been a reason to suspect the presence of, inadequacies	in or deviations from the employee's			
	knowledge or use of HEC procedures? (12.B.01)				
	Is the Supervisor required to certified and document all the	raining and re-training? Is the			
	Names of Employees trained				
12	Date / Time				
	Location of training, and				1
	Name of the Trainer	that all requirements of the LICO			_
13	Are daily inspections required to be conducted to ensure procedures are being followed? (12 C 01)	that all requirements of the HEC			
	Are annual inspections required? Are they required to be	e conducted by a Qualified Person? Is			-
14	the inspection required to document the following? (12.C	.02):			1
l I	 The HEC procedures that were inspected, 				

	The date of the inspection,		
	 The names of the employees performing the inspection, 		
	Any deficiencies identified during the inspection, and		
	 A Corrective Action Report for bringing deficiencies into compliance with the HEC 		
	program		
	Is all machinery or equipment, where unexpected energizing or release of stored energy could		
15	cause injury to an employee, required to be locked and/or tagged out during servicing or		
	maintenance? Ref: (1910.147(C)(4)(ii))		
16	Does the program prohibit removal or bypassing a guard or safety device during servicing and		
	maintenance of any equipment or machinery? Ref: $(1910.147(a)(2)(i)[A])(1910.269(d)(i)(B)(1))$		
	Are employees required to place any part of their body into an area on a machine or piece of		
17	equipment at the point of operation or where associated danger zone exists during a machine		
	operating cycle? Ref: (1910.147(a)(2)(ii)[B])(1910.269(d)(2)(B)(2))		
40	When doing service or maintenance work on cord or plug connected machinery or equipment is		
18	the plug exclusively under control of employee performing the work? Ref:		
	(1910.147(a)(2)(iii)[A])(1910.269(i)(2)(i))		
	Are procedures clearly defined for the following?		
	 Affixing lockout/tagout devices to energy isolating devices to disable machinery or 		
10	equipment and preventing unexpected energizing?		
19	• Shutting down, isolating, blocking, and securing machinery and equipment?		
	 Placing, removing, and transferring of lockout/tagout devices? 		
	 Determining the effectiveness of the lockout/tagout devices? 		
	Ref: (1910.147(C)(4)(III))		
	Do your procedures identify how affected employees will be notified that machinery or		
20	equipment is being locked out or that lockout devices are being removed? Ref: (ER 385-1-31,		
	2-2,g)(EM 385-1-1 12.A.09)		
21	Have you identified procedures to be used for removing a lockout/tagout device when		
	employee who placed it is not available? Ref: $(1910.147(c)(4)(ii))(1910.269(d)(7)(iv))$		
22	Are appropriate employees required to be provided with individually keyed personal safety		
	locks that identify the user? Ref: (1910.147(c)(5)(ii))(1910.269(d)(3)(ii)(E))		
23	Are the lockout/tagout devices standardized? Are they capable of withstanding the		
	environments? Ref: (1910.147(c)(5)(ii) [B])(1910.269(d)(3)(ii)(A))(ER 385-1-31, 6-1, b)		<u> </u>
24	Are employees required to maintain exclusive control of their keys while they have safety locks		
<u> </u>	in use? Ket: (ER 385-1-31, 7-2,b, (3))(EM 385-1-1 12.E10)		<u> </u>
0.5	Do you require employees to check the safety of the lockout by attempting to start up after		
25	making sure no one is exposed? Ref: (1910.147(d)(iii)[A](6))(1910.269(d)(v))(EM 385-1-1		
	12.E.07)		

REMARKS:

HEC FACILITY INSPECTION CHECKLIST US Army Corps of Engineers – Tulsa District		Date of Inspe	ction:		
Facilit	y:				
Conta	ct Name / Position:	Contact Phone No:			
Autho	rized Employee(s) Inspecting:	Authorized Employee Inspector(signature)			
Note: <u>Appli</u>	If <u>Deficient</u> is checked, explain in detail the deficiency and <u>cable</u> is checked, explain in detail under remarks section.	the recommended corrective actions und	er the remarks	s section. If <u>I</u>	<u>Non-</u>
Note: Contr	This form is the record of compliance with the Departmen ol of Hazardous Energy, Chapter 11: "Inspections and Prog	nt of the Army, US Army Corps of Engined pram Review."	ers Regulatior	ER 385-1-31	l, The
			Satisfactory	Deficient (Explain in Remarks)	N/A
1	A copy of the Hazardous Energy Control Program is kept with	the Issuing Individuals.			
2	The HECP Authorization is complete and up-to-date.				
3	The Equipment Authorization form is complete and up-to-date.				
4	Entries in Station Log are complete and legible.				
5	Safe Clearance Request and Safe Clearance Order (ENG For				
6	Switching orders are complete, detailed and legible. They contain orders for both removal from service and return to service. They contain only equipment rated 600V or higher.				
7	Tags are complete, legible and capable of withstanding the su	rroundings.			
8	Safe clearances are issued to authorized individuals only.				
9	Authorized individuals are provided with a copy of the Safe Cle verifications.	earance Order form for procedure			
10	Tagout devices are affixed in such a manner as to clearly indic energy isolating devices from the safe position is prohibited.	cate that the operation or movement of			
11	Where possible, tagout devices are affixed at the same point v	vhere the lockout device is attached.			
12	Equipment under clearance is safe for the work to be performe	ed.			
13	All potentially hazardous stored or residual energy is relieved, disconnected, restrained, or otherwise rendered safe.				
14	Clearance holders periodically check for leaking valves and other causes of hazardous energy re- accumulation.				
15	Authorized individuals assure the correct positioning (energize devices, and the correct placement of tagout devices.	d/de-energized) of all energy isolation			
16	All required-physical barriers and protective grounds are instal	led.			
17	Placement and removal of temporary protective grounds are re Ground Log by the issuing individual.	ecorded on the Temporary Protective			
18	Temporary protective grounds are of proper design (size, leng are being used on. Grounds are placed in the proper location	th, clamping method) for the system they and attached properly.			

19	Work does not begin until all switching, tagging, inspections, verifications, and paperwork has been completed.		
20	Group safe clearance procedures are being followed for all work done under safe clearance by two or more workers.		
21	Each person working under group safe clearances signs the master tag sheet verifying he/she fully comprehends the details of the job, the energy isolation devices actuated, and the lockout/tagout devices installed.		
22	Changes to any energy isolating device, including temporary removal of an isolation point, are not done until each individual group member has been notified and has signed off of the master tag sheet and removed their personal lock from the group lock box.		
23	Temporary removal of an isolation point is coordinated in advance with the issuing individual. 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.		
24	All card changes (temporary removal, reissue, permanent removal, additions) are recorded on the Clearance Card Log.		
25	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.		
26	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 and the affected persons have signed off the master tag sheet and removed their personal lock from the group lock box.		
27	At the time of requesting the release of a safe clearance, the principal authorized individual reports to the issuing individual that all equipment is ready for service and personnel are in the clear.		
28	Records of safe clearances are maintained locally for at least two years.		
29	ENG Form 1928, Caution Order Record, has been prepared for each caution order issued.		
30	Previous records of inspections have been completed as required and are kept on file at the facility.		

REMARKS: