

Errata Sheet

No. 2

Safety

THE CONTROL OF HAZARDOUS ENERGY

ER 385-1-31

1 November 2009

Administrative Change: Effective immediately, the following change shall be made. This change is administrative in nature only.

1. Page 7-4, Paragraph 7-3(a): change the word “oversee” to the phrase “coordinate with”

CESO

Regulation
No. 385-1-31

1 November 2009

Safety and Occupational Health
THE CONTROL OF HAZARDOUS ENERGY

Supplementation to this regulation is required. USACE Commanders shall provide a copy of their local supplement to their local Safety and Occupational Health Office.

TABLE OF CONTENTS

		<u>Paragraph</u>	<u>Page</u>
Chapter 1	Control of Hazardous Energy		
	Purpose	1-1	1-1
	Scope	1-2	1-1
	Distribution Statement	1-3	1-1
	References	1-4	1-1
	Policy	1-5	1-1
	Suggested Improvements	1-6	1-2
Chapter 2	Hazardous Energy Control Program (HEC Program)		
	Regional HEC Program	2-1	2-1
	Contents	2-2	2-1
Chapter 3	Emergencies		
	Suspension of Requirements	3-1	3-1
	Safety of Personnel	3-2	3-1
	Emergency Switching	3-3	3-1
Chapter 4	Responsibilities		

This regulation supersedes ER 385-1-31, dated 01 August 1994.

	<u>Paragraph</u>	<u>Page</u>
Responsible Official	4-1	4-1
Issuing Individual	4-2	4-1
Principal Authorized Individual (PAI)	4-3	4-1
Authorized Individuals	4-4	4-1
Affected Persons	4-5	4-1
All Employees	4-6	4-1
 Chapter 5		
Training		
General	5-1	5-1
Documentation	5-2	5-1
Initial Training	5-3	5-1
New employee orientation	5-3.a	5-1
Authorized and Issuing Individuals	5-3.b	5-1
Affected Persons	5-3.c	5-1
Retraining	5-4	5-1
Incidental Persons	5-5	5-2
 Chapter 6		
Locks and Tags		
Locks	6-1	6-1
Tags	6-2	6-1
 Chapter 7		
Hazardous Energy Control (HEC) Procedures		
Applying Locks and Tags	7-1	7-1
Lockout/Tagout Requiring a Safe Clearance	7-2	7-1
Requests for a Clearance	7-2.a	7-1
Issuing a Clearance	7-2.b	7-2
Temporary Removal (Temporary Lifts)	7-2.c	7-3
Completion of Work	7-2.d	7-3
Releasing a Clearance	7-2.e	7-4
Group Safe Clearance	7-3	7-4
Temporary Protective Grounds	7-4	7-5
Transfer of a Clearance	7-5	7-6
Unattended or Remote Stations	7-6	7-7
Lockout/Tagout Without a Clearance	7-7	7-7
Multiple Point	7-7.a	7-7
Single Point	7-7.b	7-8

		<u>Paragraph</u>	<u>Page</u>
Chapter 8	Caution Orders		
	Purpose	8-1	8-1
	General	8-2	8-1
	Identification	8-3	8-1
	Issuance/Release	8-4	8-1
	Documentation	8-5	8-1
	ENG Form 1928-R, Caution Order Record	8-6	8-1
	ENG Form 1924, Caution Order Tag	8-7	8-1
Chapter 9	Outside/Contractor Personnel		
	Personnel Protection	9-1	9-1
	Submittals	9-2	9-1
	Coordination	9-3	9-1
Chapter 10	Documentation/Recordkeeping		
	Record Retention	10-1	10-1
Chapter 11	Inspections and Program Review		
	Purpose	11-1	11-1
	Responsibility	11-2	11-1
	Frequency	11-3	11-1
	Review of Program	11-4	11-1
	Documentation	11-5	11-1
Appendix A – Definitions			A-1
Appendix B – Forms			B-1

CHAPTER 1

Control of Hazardous Energy

1-1. Purpose. To establish consistent procedures and criteria for the safe and reliable control of hazardous energy at USACE operated facilities with full implementation as is practical, but within no longer than two years from the date of this regulation only for items that require budget adjustments to accomplish. An implementation plan shall be developed by each USACE Command detailing implementation schedule, procedures, etc.

1-2. Scope. This document establishes procedures and operating criteria that shall be complied with throughout USACE. It prescribes procedures for the safety of personnel when working on or near any system that produces, uses, or stores hazardous energy (electrical, hydraulic, pneumatic, gravity, etc) as well as equipment protection. It establishes minimum performance requirements and standards for the control of hazardous energy at USACE operated facilities.

1-3. Distribution Statement. Approved for public release, distribution is unlimited.

1-4. References.

a. 29 CFR 1910.147, 1910.333, 1910.269.

b. OSHA Directive #CPL: 02-00-147.

c. ANSI C2, National Electrical Safety Code.

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

e. EM 385-1-1.

f. AR 690-700, Chapter 751.

1-5. Policy. It is the policy of the USACE to:

a. Protect all persons that are directly involved with or affected by the installation, servicing and/or maintenance of machines and equipment.

b. Require a current, written Activity Hazard Analysis for the work to be performed per EM 385-1-1. The AHA shall identify, analyze and provide controls for potential hazardous energy sources and be completed prior to conducting work (shall also address potential emergency situations).

c. Develop and implement a comprehensive Hazardous Energy Control (HEC) Program at USACE operated facilities.

d. Use lockout where isolation points are capable of being locked out. Tags shall always accompany locks.

e. When isolation points are not capable of being locked, then tagout only is permitted and must comply with paragraph 7-1.c. See also 5-3.c (3) and 7-1.d.

f. Train employees and assure they understand the purpose and application of HEC program and procedures and are knowledgeable of local requirements.

g. Coordinate servicing and maintenance activities when more than one employer, work group or facility is involved or affected.

h. Perform periodic inspections to assure continued program compliance.

i. Ensure modified, rehabilitated or new equipment is capable of accepting lockout devices.

j. Inform employees of their rights and responsibilities with regard to reporting unsafe conditions and/or procedures.

1-6. Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms).

CHAPTER 2

Hazardous Energy Control Program (HEC Program)

2-1. Regional HEC Program. A HEC Program shall be developed at the appropriate regional level (District, Division, FOA, etc.) to establish and maintain the greatest practical level of consistency within areas of control.

2-2. Contents. As a minimum, the HEC Program shall:

- a. Be supplemental to this Engineering Regulation;
- b. Identify the Responsible Official by position or title and include their responsibilities;
- c. Identify the Issuing and Authorized Individuals and include their responsibilities;
- d. Identify training and evaluation requirements;
- e. Describe HEC locks used at the facility(s);
- f. Describe inspection procedures;
- g. Describe procedures for notification and removal of lockout/tagout devices when the Principal Authorized Individual (PAI) is not available;
- h. Describe procedures to identify equipment that can be removed from service without a clearance, as per paragraph 7-7;
- i. Clearly and specifically outline the scope, purpose, authorization, rules, and techniques that will be used to control hazardous energy sources.
- j. Be made available to all personnel with potential exposure to hazardous energy;
- k. Include provisions for reporting violations of HEC Program or procedures to the Responsible Official for documentation. Violators shall be subject to appropriate administrative disciplinary action;
- l. A local supplement shall detail specifics not outlined in the program. Local manuals and drawings which may be required for the application of lockout and tagout devices will be made available to all persons involved in issuing and holding safe clearances.

CHAPTER 3

Emergencies

3-1. Suspension of requirements. In an emergency (i.e., eminent threat to life or limb), the Responsible Official or his designated representative as documented in the local supplement, may modify or suspend any of these requirements temporarily as may be considered necessary to permit proper handling of the specific emergency.

3-2. Safety of Personnel. In handling such emergencies, safety of personnel and members of the public shall be given predominant consideration.

3-3. Emergency Switching. If emergency switching is required and Authorized Individuals are not available, other personnel may perform switching if deemed qualified by the Responsible Official.

CHAPTER 4

Responsibilities

4-1. Responsible Official. The Responsible Official at each project or facility has overall responsibility for their Project's Program (and associated HEC procedures) and shall ensure that the requirements of this regulation are properly applied and adhered to.

4-2. Issuing Individual. 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 for the accomplishment of servicing/maintenance work. The Issuing Individual will maintain all documentation associated with safe clearances and will provide the Authorized Individual or PAI with a proposed copy of the Safe Clearance Request form for procedure verification.

4-3. Principal Authorized Individual (PAI). The Principal Authorized Individual 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 regulation and local HEC Programs.

4-4. Authorized Individuals. Authorized Individuals are qualified to hold clearances as identified in the HEC Program by the Responsible Official. An Authorized Individual may act in the capacity of a PAI or an Affected Person as appropriate.

4-5. Affected Persons. Affected persons perform servicing and maintenance in accordance with this regulation and local HEC Program requirements.

4-6. All Employees. All employees shall report procedural errors and/or violations to their supervisor or appropriate official.

CHAPTER 5

Training

5-1. General. Control of hazardous energy and HEC Program training shall be provided.

5-2. Documentation. All training documentation shall be maintained at the project for at least two years. Documentation is required for both initial training and retraining and shall contain, as a minimum: employees' names, dates of training, instructor's name and outline of training content.

5-3. Initial Training. Employees involved with HEC procedures shall have initial training and must demonstrate adequate working knowledge of HEC Program and local procedures and policies prior to placement on the list of Issuing and Authorized individuals.

a. Initial training shall be provided as part of new employee orientation and shall be followed by a written assessment.

b. Authorized and Issuing Individuals shall be trained in:

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

(2) Recognizing hazardous energy sources that apply;

(3) Methods and means to isolate and control energy;

(4) The requirements of the local HEC Program.

c. Affected persons shall be instructed in the purpose and use of the HEC procedures. 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; AND

(3) When tagout procedures are used, personnel shall be trained in the limitations of tags, as per paragraph 7-1.c. See also 5-1.e and 7-1.d.

5-4. Retraining. Retraining for employees involved with HEC procedures shall be provided:

- a. at least every twelve months and followed by a written assessment;
- b. when a periodic inspection reveals deviations from procedures or inadequacies in knowledge or use of HEC procedures; or
- c. when there is a change in job assignment, a change in hazards, or a change in the HEC Program.

5-5. Incidental Persons. 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, reenergize, 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).

CHAPTER 6

Locks and Tags

6-1. Locks. Locks shall:

- a. 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. Be standardized within every facility, and recognizable as a HEC lock; and
- c. Provide a means to identify the individual that applied the lock.

6-2. Tags. Tags shall:

- a. Be standardized within every facility and have content and format equivalent to the example of ENG Form 1925, Danger - Do Not Operate Tag and the ENG Form 1924, Caution Order Tag shown in Appendix B; See also paragraph 7-4, and Appendix B for (Temporary Protective) Ground Tag Requirements.
- b. 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;
- c. Be attached by means which are: non-reusable; substantial enough to prevent inadvertent or accidental removal; attachable by hand; self-locking; non-releasable, with a minimum unlocking strength of no less than 50 pounds; and having the basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie;
- d. Identify the person to whom the Safe Clearance is being issued (Main Hold Card) and who is placing the Auxiliary Hold Cards.

CHAPTER 7

Hazardous Energy Control (HEC) Procedures

7-1. Applying locks and tags.a. **Tags shall be affixed** to each energy isolation device:

(1) By the Issuing Individual or his designated representative in work areas under a facility operator's control;

(2) By Authorized Individuals who will be performing the work in work areas not under a facility operator's control;

(3) At the same point where the lock would be attached (whenever possible).

b. **Locks shall be affixed** to each energy isolation device by Authorized Individuals (using a device that allows multiple locks if necessary). When applied, locks will secure the energy isolation device in the safe position.

c. **When tagout alone is used** (i.e., equipment is incapable of accepting locking equipment) the following conditions shall be met (see also paragraphs 1-5.e, 5-3.c (3) and 7-1.d):

(1) Personnel shall be instructed in the limitations of tags;

(2) 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.);

(3) Tags shall be treated as locks and shall be removed by the Issuing Individual (or his Designated Representative) or the Authorized Individual that attached the tag. Tags shall never be bypassed, ignored, or otherwise defeated (see Chapter 3, Emergencies).

d. **Positive Controls in Public Access Areas.** In areas with public access, locks or other positive controls shall be used on the energy isolation devices. Tagout alone is not permitted in public access areas.

7-2. Lockout/Tagout Requiring a Safe Clearance.a. **Requests for safe clearance.**

(1) The Principle Authorized Individual (PAI) makes requests for safe clearances.

(2) Requests for safe clearance shall be definite, specific and provide adequate information for the Issuing Individual to complete the ENG Form 1927- R, Safe Clearance Request.

b. Issuing a 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, verify and document 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 or his Designated Representative performs the energy isolation procedures (switching) and tagging.

(3) 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 isolation locks on each lockable energy isolation device. Once the PAI has accomplished locking of the energy isolation devices, he/she will place the isolation lock key into a group lockbox and secure the lockbox with their personal lock. The PAI maintains control of the key belonging to their personal lock on the lock box.

(4) Once approved, the safe clearance is issued to the PAI. When Issuing a safe clearance, the following data will be entered in the log in a distinctive color:

(a) safe clearance number;

(b) purpose of the safe clearance and system to be cleared;

(c) date and time (in military time) of issue;

(d) names of Issuing Individual and PAI receiving the safe clearance.

(5) Safe clearances will be issued in person whenever possible.

(6) Provide additional safeguards if determined needed [i.e., place temporary protective grounds (TPGs), mechanical blocks, etc.].

(7) Only in emergencies (see Chapter 3) and at the Responsible Official's discretion, may the same person fill the role of both the Issuing Individual and the PAI.

c. Temporary removal of locks and tags (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) A procedure shall specify the actions which are to be performed in the following sequence:

(a) Clearing the system of tools and equipment;

(b) Removal of personnel from the area and notification of all Affected Persons that locks and tags will be removed;

(c) Remove TPGs, blocks, etc., as appropriate;

(d) Removal of the locks and tags;

(e) System energization and the necessary testing or repositioning, AND

(f) System isolation and reapplication of HEC procedures to continue servicing or maintenance.

(3) All temporary lifts shall be performed by the Issuing Individual or their Designated Representative and the PAI.

d. Completion of Work. Before 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 non-essential items have been removed from the system and the system components are operationally intact;

(2) If placed, remove TPGs, blocks, etc and retrieve TPG tags;

(3) Affected Persons will sign off on the master tag and remove their personal locks; AND

(4) All employees shall physically clear the area.

e. **Releasing a clearance.**

(1) When releasing a safe clearance, the PAI shall:

(a) Report to the Issuing Individual that all work is complete and equipment is ready to be returned to service;

(b) Notify the Issuing Individual that TPGs, blocks, etc. have been removed;

(c) Remove their lock from the group lockbox and retrieve the isolation lock key;

(d) Complete safe clearance documentation and release the clearance to the Issuing Individual AND

(e) Remove isolation locks.

(2) When releasing a safe clearance, the Issuing Individual shall enter the following information into the log:

(a) safe clearance number;

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

(c) names of Individuals issuing and receiving the release authorization;

(d) upon releasing a safe clearance, the word "RELEASED" shall be written or stamped across the corresponding log entries in large, bold letters.

(3) Issuing Individual shall pick up tags (may be performed by the Designated Representative) and reenergize equipment in the proper sequence.

7-3. Group Safe Clearance. When servicing or maintenance is performed by a crew, craft, department, or other group of personnel, they shall use a HEC procedure which affords them a level of protection equivalent to that provided by individual lockout and tagout. Group safe clearances shall be conducted in accordance with the following requirements:

a. The person that requested and was issued the clearance is the PAI and shall oversee the crew, craft, or group working under that clearance;

b. The PAI shall attach an isolation lock on each lockable energy isolation device;

c. Once the PAI has accomplished locking of the energy isolation devices, he/she

will place his/her isolation lock key into a group lockbox and secure the lockbox with their personal lock;

d. Each Affected Person working under the group clearance shall sign the Master Tag (work permit) verifying he 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;

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

7-4. 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 600 volts, are considered as devices to dissipate energy and are considered part of the HEC Procedures, but not part of the clearance.

a. **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:

- (1) Safe Clearance is accepted by the PAI;
- (2) PAI requests permission from the Issuing Individual to place TPGs;
- (3) All TPGs shall be placed by or under the DIRECT supervision of an Electrically Qualified Individual;
- (4) TPG tags are placed by the Issuing Individual or his Designated Representative. TPG tags are accounted for by location and number and associated with a clearance;
- (5) Affected Persons initial acceptance for each ground on a TPG Log or equivalent;
- (6) The system is now considered safe for work to be performed.

b. **Removal.** TPGs are removed prior to the release of the associated Safe Clearance as per the following:

- (1) PAI notifies Issuing Individual that he is going to remove TPGs;
- (2) PAI notifies all Affected Persons that TPGs will be removed/moved;
- (3) Affected Persons initial for the release of each TPG;

- (4) Issuing Individual or his Designated Representative removes TPG Tags;
- (5) All TPGs shall be removed by or under the DIRECT supervision of an Electrically Qualified Individual;
- (6) The associated safe clearance may now be released.

c. **Documentation.** Addition and removal of TPGs shall be recorded by the Issuing Individual as detailed in the local HEC program.

d. **Requirements.** The NESC shall be used as a guide in grounding requirements and procedures.

(1) 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.

(2) 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.

7-5. Transfer of a Clearance.

- a. Transfers of a clearance are permitted from PAI to PAI.
- b. Documentation is completed by the Issuing Individual.
- c. When, due to extraordinary circumstances, it is not possible for the PAI to affect the release or transfer of a safe clearance, the Issuing Individual may assume full responsibility for the safe clearance and transfer to a different PAI after the Responsible Official has removed or authorized removal of the PAI's personal lock from the lockbox.
- d. Verification must be documented by the Issuing Individual that the PAI that applied the device is not at the facility.
- e. The Issuing Individual makes all reasonable efforts to contact the PAI to obtain permission to remove the lockout/tagout device(s).
- f. The Issuing Individual advises the person to whom the clearance is to be transferred (has to be qualified and listed as such in local HEC program) about assuming the responsibility of the scope of the safe clearance, the work already performed and the work to be performed.
- g. The Issuing Individual either transfers the safe clearance to the new PAI or issues a new safe clearance and cancels the original.

h. The original PAI if informed prior to resuming work at the facility, about the status of the associated clearances.

7-6. Unattended or Remote Stations.

a. The Issuing Individual or his Designated Representative controls the proper clearing and tagging of equipment in accordance with the HEC procedure. HEC procedures that cannot practically involve the physical presence of the Issuing Individual will necessitate detailed communication between the Issuing Individual and the PAI about the required Clearance process. In an emergency (see Chapter 3), the Responsible Official may designate the same person to fill the role of both the Issuing Individual and the PAI.

b. When the Issuing Individual is at a location other than where the safe clearance is to take place, the Designated Representative shall notify the Issuing Individual prior to the start and immediately following completion of clearing operations.

c. The PAI requesting the Safe Clearance shall verify that the switching and tagging placement is correct and places locks to secure each energy isolating device. Any system operated by a remotely controlled source will be isolated so that it cannot be operated by that source.

d. The PAI shall verify that isolation and de-energizing of the systems has been successfully accomplished by physically checking the system in an appropriate manner.

e. After completion of the work, the Issuing Individual shall be informed of the time of commencement and completion of the clearance.

7-7. Lockout/Tagout Without a Clearance. The Responsible Official may designate certain equipment (in writing) to be removed from service without a safe clearance. ***Personal Locks and tags*** shall be used when removing equipment from service under these conditions.

a. **Multiple Point Lockout/Tagout without a clearance** must be approved and documented by the Issuing Individual, including the start and end times and date. Use of this process is permitted only when the following criteria are met:

(1) Equipment is rated at 480-volt or lower;

(2) The operation or work to be accomplished is limited to one shift and one work crew;

(3) One personal lock and personal tag per worker per isolation point with a maximum of four isolation points. (See Appendix B);

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

(5) The servicing or maintenance does not create hazards for other employees;

(6) Documentation shall be performed and shall consist of the following:

(a) An AHA that has been prepared and approved that identifies all sources of hazardous energy; and

(b) An approved, step-by-step procedure, specific to the piece of equipment being removed from service; and Recorded in the daily log book.

b. Single Point Lockout/Tagout without a clearance must be approved and documented by the Issuing Individual, including the start and end times and date. This option is only permitted under the following conditions:

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

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

(3) Equipment is rated at 480-volt or lower;

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

CHAPTER 8

Caution Orders

- 8-1. Purpose. Caution Orders shall not be used to provide personal protection but instead are issued to direct attention to abnormal, hazardous, or unusual conditions or to special operating instructions to be followed.
- 8-2. General. Caution Orders must be approved and documented by the Issuing Individual. Outstanding Caution Orders shall be reviewed at least every 6 months by the Issuing Individual to insure Caution Order is still needed.
- 8-3. Identification. Each Caution Order shall be assigned an identification number.
- 8-4. Issued and Released. Caution Orders shall be issued and released in accordance with the procedures outlined for the issue and release of safe clearances.
- 8-5. Documentation. Caution Orders will be logged in a distinctive color other than that used for safe clearance entries in accordance with the HEC procedures. The data entered for issue and release will conform to the data required for safe clearances, per paragraphs 7-2.b and 7-2.e.
- 8-6. ENG Form 1928-R. ENG Form 1928-R, Caution Order Record, will be prepared for each caution order issued. This will supplement the project log entry at those projects maintaining log books and provide the necessary project records at other projects. Records shall be maintained for a minimum of 2 years.
- 8-7. Tags. Caution order tags shall be standardized within each facility and have content and format equivalent to the example of ENG Form 1924, Caution Order Tag shown in Appendix B. (ENG Form 1924, Caution Order Tag, or equivalent), will be properly completed and attached to appropriate control devices and equipment in the same manner as Danger - Do Not Operate tags.

CHAPTER 9

Outside/Contractor Personnel

9-1. Personnel Protection. 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.

9-2. Submittals. The non-USACE entity will provide their HEC Program and procedures to the government designated authority (GDA) as a submittal, which must be accepted by the GDA prior to beginning work. Upon GDAs acceptance of the submittal, the non-USACE entity shall implement their HEC procedure in coordination with the local Issuing Individual.

9-3. Coordination. When safe clearances will be required to safely perform the work, the appropriate USACE individual will discuss the HEC requirements with the non-USACE representative to ensure they understand the hazards, procedures and limits of the clearance.

a. USACE individual and the non-USACE representative shall agree upon the procedures to be used and ensure that their personnel understand and comply with restrictions of each other's HEC Program.

b. When the system or equipment creating the exposure can be removed from service without a clearance and after coordination with USACE representative, the non-USACE entity shall implement their HEC procedure(s).

CHAPTER 10

Documentation and Recordkeeping

10-1. Record Retention. All training records, clearance logs, forms (ENG Forms 1924, 1925, 1927-R and 1928), work permits and inspection reports shall be kept on file for a minimum of two years.

CHAPTER 11

Inspections and Program Review

11-1. Purpose. Periodic inspections shall be designed and conducted to insure all requirements of the HEC Program are being followed, to identify and correct any weaknesses (or potential weaknesses) in the program or procedures, in employee training, or in enforcement of the requirements.

11-2. Responsibility. The Responsible Official shall ensure the periodic inspections are performed.


11-3. Frequency. Periodic inspections shall be performed **at least annually** by individual(s) knowledgeable in HEC Program and Procedures, to include a Qualified Person. Personnel internal to the facility may conduct the inspection one year and personnel external to the facility shall conduct the inspection the next year (peer review). The person using the HEC procedure cannot inspect the procedure.

11-4. Review of Program. Periodic inspections of HEC procedures shall cover at least one lockout/tagout without a clearance and a safe clearance in progress, the procedure details and include a review between the inspectors and individuals involved in the safe clearance being inspected.

11-5. Documentation. Inspections shall be documented (date, persons involved, results) and identified deficiencies noted. Corrective actions taken to improve the program or employee knowledge of the program must include how any revision of specific procedures or a general change is communicated to the workers.

FOR THE COMMANDER:

2 Appendices
APP A – Definitions
APP B - Forms


STEPHEN L. HILL
Colonel, Corps of Engineers
Chief of Staff

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.

Authorized Individual. A qualified person authorized 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-R (see Appendix B). A form on which to record information pertinent to each Caution Order issued.

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

Danger - Do Not Operate Tag, ENG Form 1925 (see Appendix B). 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 locks and tags on energy isolation devices.

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. 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 QP 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.

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, and other control circuit type devices.

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:

- (1) the tagout device is attached at the same location as the lockout device would have been attached;
- (2) all tagout-related requirements of this regulation have been complied with, and
- (3) 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. The Hazardous Energy Control Program shall be developed at the USACE Division or District level to insure the greatest level of consistency among facilities and areas of responsibility.

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

Isolation Locks. Hazardous energy control locks that are placed and removed by the Principal Authorized Individual.

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, who 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.

Local Supplement. A document that contains site/project specific HEC Program/procedural information that is either not addressed in the Division or District Program or further clarifies or defines applicable HEC processes as related to the HEC Program.

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. 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. The Master Tag may take the form of a safe clearance request form, clearance holder fact sheet, main hold card, work permit, or similar document that provides worker accountability.

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

Personal Tag. 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.

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 approves and directs the Hazardous Energy Control Program.

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

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, ENG Form 1927-R (see Appendix B). The form on which requests for safe clearances, safe clearance releases, and all other pertinent data in connection with safe clearances is maintained. Computer generated facsimiles are authorized.

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.

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

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. Tags used as part of a hazardous energy control procedure to assure accountability of temporary protective grounds.

Unqualified Person. Persons trained in and familiar with any of the electrical safety-related practices necessary for their safety while performing their job.

Work Permit. A document used to assure worker accountability during group lockout and tagout. See definition for master tag.

APPENDIX B

Forms

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

DEPARTMENT OF THE ARMY 35' CORPS OF ENGINEERS

DANGER

DO NOT OPERATE
MAIN HOLD CARD

STATION _____
CLEARANCE NO. _____ CARD NO. _____
CLEARANCE ON _____

ISSUED TO _____
ISSUED BY _____
DATE _____ TIME _____

AUXILIARY CARD PLACEMENT

CARD NO.	PLACED BY	LOCATION	REMOVED BY
2			
3			
4			
5			
6			
7			
8			
9			
10			

ENG FORM 1925, Aug 94
PREVIOUS EDITIONS ARE OBSOLETE

DANGER

DO NOT OPERATE
AUXILIARY HOLD CARD

CLEARANCE NO. _____ CARD NO. _____
PLACED BY _____ TIME _____
ISSUED TO _____
ISSUED BY _____
DATE _____
EQUIPMENT HELD _____

NOTES

The ENG Form 1925 can be found on the USACE HQ Publications web page (go to ENG Forms list) at this link: <http://140.194.76.129/publications/>. This artwork can be used to order supplies locally.

Figure 3. Personal Protective Ground Tag (Example).



This is an example of a tag that may be used to identify and account for temporary protective Grounds (TPGs). A TPG tag may be developed locally according to local Programs and/or policies.

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



This is an example of a tag used to identify personal lockout locations. A red personal tag may be developed locally according to local programs and/or policies.