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	Safety and Occupational Health THE CONTROL OF HAZARDOUS ENERGY, ENG FORM 1924, ENG FORM 1925, ENG FORM 1927-R, ENG FORM 1928	
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DEPARTMENT OF THE ARMY
U. S. Army Corps of Engineers
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Regulation
No. 385-1-31

1 August 1994

Safety and Occupational Health
THE CONTROL OF HAZARDOUS ENERGY (SAFE CLEARANCE)

1. Purpose. This regulation prescribes policies and procedures to safeguard personnel whose research, testing, construction, operating, or maintenance duties require them to work on or in proximity to equipment in which the unexpected energizing, start-up, or release of stored energy could cause personal injury or property damage.

2. Applicability. This regulation is applicable to all HQUSACE/OCE elements, major subordinate commands, districts, laboratories, and field operating activities (FOA).

3. References.

- a. 29 CFR Part 1910.147, 1910.333, and 1910.269.
- b. AR 690-700, Chapter 751.
- c. EM 385-1-1.
- d. ANSI C2, National Electrical Safety Code.
- e. OSHA Instruction STD 1-7.3

4. Definitions. Definitions are contained in Appendix A.

5. Policy.

a. Before performing service or maintenance on equipment in which the unexpected energizing, start-up, or release of stored energy could occur and cause personal injury, property damage, or loss of content, protection, capacity, or energy, the equipment shall be covered by a safe clearance and its energy sources controlled in accordance with the procedures of this regulation. In such circumstances, personnel and resources shall not be considered protected until hazardous energy control procedures have been implemented.

b. Each facility shall have a written hazardous energy control program and written hazardous energy control procedures.

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c. Government or contractor personnel shall not be permitted to work on any equipment subject to hazardous energy control procedures until a safe clearance has been issued to the authorized individual in charge of the work and all hazardous energy control procedures and special instructions have been completed.

d. Systems with energy isolating devices which are capable of being locked out shall utilize locking devices to control hazardous energy unless the responsible official can demonstrate that (1) the use of tagout devices will provide full personnel protection as defined in Appendix A, (2) all affected personnel are informed that tagout is being used in lieu of lockout, and (3) the use of locking devices would entail burdens that exceed any advantage to the use of lockout over the use of tagout devices. Any safe clearance point which may be accessible to the public or other unauthorized individuals shall, in addition to tagging, be locked or otherwise secured to prevent unauthorized operation.

e. If an energy isolating device is not capable of being locked out, the hazardous energy control procedures shall utilize tagout. When a tagout device is used in lieu of a lockout device, the issuing individual shall be provided documented substantiation of compliance with the following prior to approving the use of tagout in lieu of lockout -

(1) all tagout requirements of this regulation and of the hazardous energy control procedures shall be met;

(2) the tagout device shall be attached to the same location, if possible, that the lockout device would have been attached; if this is not possible then the tag shall be attached as close as safely possible to the device and in a position that will be immediately obvious to anyone attempting to operate the device; and

(3) additional means (e.g., placement of the tag in a manner which inhibits operation of the energy isolating device, removal of an isolating circuit mechanism, blocking of a control switch, opening of an extra disconnecting device, removal of a valve handle to reduce the likelihood of inadvertent energizing, etc.) shall be employed to provide a level of protection equivalent to that provided by a lockout device.

f. Training shall be provided in accordance with paragraph 12 to ensure that the purpose of the hazardous energy control program and hazardous energy control procedures are understood.

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g. Periodic (at least annual) unannounced inspections of hazardous energy control procedures and review of energy control programs shall be conducted.

h. Whenever replacement, major repair, renovation, or modification of machinery, equipment, or transmission line (electrical, mechanical, hydraulic, pneumatic, etc.) is performed or new machinery, equipment, or transmission line is installed, energy isolating devices designed to accept a lockout device shall be installed.

i. Contractor personnel performing work at Corps-operated facilities shall comply with the hazardous energy control procedures of the facility and the hazardous energy control requirements of EM 385-1-1.

j. At the option of the responsible official, certain equipment (delineated below), as designated in writing, may be operated or removed from service without a safe clearance. If the responsible official exercises this option he shall prepare a list of all equipment which may be operated, taken out of service, or inspected without a safe clearance. The responsible official shall include appropriate measures in the local hazardous energy control program to provide adequate protection for the personnel involved. This option is only permitted when the operation or work to be accomplished shall be limited to one shift and the authorized individual shall remain with the equipment at all times which it is operated or removed without a safe clearance. In addition, equipment so designated must be -

(1) of a type that exposure to unexpected energizing or start up of the equipment is controlled by a device (such as plug and cord connection) under the exclusive control of the employee performing the work;

(2) easily isolated such that the authorized individual can exercise close control over the isolation points; and

(3) other than in the main stream so as to affect facility mission.

k. Affected and authorized individuals shall report circumstances that do not meet the requirements of this regulation to the issuing authority. The issuing authority shall have the authority to suspend operations until the requirements are met.

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a. Responsible officials shall -

(1) be responsible for their facility's hazardous energy control program;

(2) develop and implement a written hazardous energy control program applicable to the facilities under their control; assure that hazardous energy control programs are reviewed and updated annually and comply with this regulation;

(3) assure periodic inspections of their facilities hazardous energy control procedures;

(4) designate, in writing, the issuing individuals within their facilities and the safe clearances they may issue and the authorized individuals within their facilities and the type of clearance each person may be issued;

(5) prepare and maintain a list of the equipment which require implementation of hazardous energy control procedures in order to be removed/returned to service;

(6) assure that manuals and drawings which may be required for the application of lockout or tagout devices are available to all persons involved in issuing and holding safe clearances;

(7) ensure that initial and periodic training on their facility's hazardous energy control program and procedures are provided; and

(8) assure that appropriate action is taken subsequent to violations of hazardous energy control procedures.

b. Issuing individuals shall -

(1) review requests for safe clearance; upon verifying that the proposed hazardous energy control procedures meet the requirements of this regulation and the hazardous energy control program of the facility and that procedures are adequate for the work to be performed, the issuing individual may approve the Safe Clearance Request (ENG Form 1927-R) (see Appendix B);

(2) provide the authorized individual with a copy of the Safe Clearance Request form for procedure verification;

(3) make all necessary arrangements for interruption of services, including notification of customers; coordinate with appropriate agencies and other entities to assure isolation of systems which are to be cleared;

(4) assure the positioning of all energy isolation devices as listed on the Safe Clearance Request form and locking or tagging all points accordingly; assure that locks, where used, are affixed in a manner that will hold the energy isolating devices in a "safe" position; assure that tags, where used, are fastened at the same point at which a lock would have been attached or as close as safely possible to the energy isolating device (these may be performed by a designated representative of the issuing individual); locks or tags placed by the issuing authority do not replace the requirement of placing locks and tags by each individual working on equipment, unless the requirements of group lockout and tagout are met (see paragraph 8f);

(5) assure that the equipment under clearance is safe for the work to be performed (this may be performed by a designated representative of the issuing individual);

(6) maintain cognizance of equipment condition and status during the safe clearance;

(7) assure equipment is ready for service after work has been completed and all authorized individuals have requested release of the safe clearance (this may be performed by a designated representative of the issuing individual); and

(8) record the request, issue, and release of safe clearances in an appropriate permanent local log.

c. The authorized individual shall -

(1) make request for safe clearance using ENG Form 1927-R;

(2) check the hazardous energy control procedures to assure that the protection to be provided is adequate for the work to be performed;

(3) assure the correct positioning (energized/de-energized) of all energy isolation devices, and the correct placement of lockout and tagout devices;

(4) assure installation of all required physical barriers and protective grounds;

(5) make appropriate tests to verify isolation of the system; if there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued;

(6) assume responsibility for the system covered by the safe clearance until it is released to the issuing individual;

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(7) keep the issuing individual informed of lockout and tagout conditions and the status of work; and

(8) assure that the system is protected from hazardous energy following completion of servicing or maintenance but prior to the request for release of safe clearance; assure that all nonessential items have been removed from the area and that all personnel have been safely positioned or removed. In the case of remote facilities, another qualified person may conduct the inspection under the direction of the issuing individual.

7. Hazardous Energy Control Programs and Procedures. Each facility shall maintain a hazardous energy control program and hazardous energy control procedures.

a. The hazardous energy control program shall -

(1) define the hazardous energy control requirements of the facility, incorporate hazardous energy control procedures, list the responsible official as well as the issuing and authorized individuals and their responsibilities, and define personnel training requirements;

(2) be supplemental to and within the guidelines of this regulation;

(3) be reviewed and updated at least annually; and

(4) be made available to all personnel with potential exposure to hazardous energy.

b. The hazardous energy control procedures shall clearly and specifically outline the scope, purpose, and authorization, rules, and techniques to be utilized for the control of hazardous energy, including, but not limited to -

(1) a statement of the intended use of the procedure;

(2) procedural steps for shutting down, isolating, blocking, and securing systems to control hazardous energy;

(3) procedural steps and responsibilities for the placement, removal, and transfer of lockout and tagout devices;

(4) procedural steps for placing and tagging, and moving or removing and untagging, protective grounds;

(5) requirements for testing the system to verify the effectiveness of isolation; and

(6) the means to achieve compliance with the procedures.

c. It is recommended that routine safe clearances - defined as those using hazardous energy control procedures which have been standardized for a particular system - be maintained with both the issuing and the authorized individual in order to facilitate their request, review, and approval. Each hazardous energy control procedure shall be identified by a unique code which identifies the facility and the procedure.

d. It is highly recommended that every district and laboratory establish a committee to evaluate implementation of hazardous energy control requirements. Such a committee, if composed of representatives from every USACE command element required to use hazardous energy control procedures, will be highly effective in accomplishing the following

(1) ensuring that hazardous energy control procedures are utilized in all required applications. Traditionally, hazardous energy control procedures have been identified with power generation and distribution; efforts will be required to ensure that these procedures are utilized in these as well as other applications (e.g., shops, navigation projects, machinery and equipment, electrical systems);

(2) developing local hazardous energy control programs, procedures, and training which are appropriate and implementable for all applications;

(3) conducting periodic inspections, as required by paragraph 11, to ensure that all requirements of the hazardous energy control program are being followed; and

(4) investigating hazardous energy control violations and accidents.

e. Violations of hazardous energy control program or procedures shall be documented and reported to the responsible official. Violators shall be subject to appropriate disciplinary action.

8. Lockout and Tagout Devices.

a. Lockout and tagout devices shall -

(1) be capable of withstanding the environment and conditions to which exposed for the maximum period of time the exposure is expected;

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(2) be standardized (within every facility) in at least one of the following aspects: color, shape, or size; and

(3) indicate the identity of the person applying the devices.

b. In addition to the requirements of paragraph 8a, lockout devices 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).

c. In addition to the requirements of paragraphs 5e(2), 5e(3), and 8a, tagout devices shall also -

(1) have standardized (within every facility) print and format (ENG Form 1925, Danger - Do Not Operate Tag, is the Corps' standardized tagout device);

(2) 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; and

(3) 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. The presence of a lockout/tagout device does not guarantee that a safe clearance is currently in effect on that piece of equipment.

e. Requirements for applying lockout and tagout devices.

(1) The system shall be turned off or shut down in accordance with the hazardous energy control procedure specified in the Safe Clearance Request form. An orderly shutdown shall be utilized to avoid any additional or increased hazards to personnel as a result of system de-energizing.

(2) All energy isolating devices needed to control energy to or within the system shall be physically located and positioned in such a manner as to isolate all energy sources at all potential energizing points.

(3) Lockout or tagout devices shall be affixed to each energy isolating device by authorized individuals who will be performing the work, unless group lockout and tagout is used. A means to

identify the person placing the lockout and tagout devices shall be provided on each device. Lockout devices shall be affixed to each energy isolating device in a manner that will maintain the energy isolating device in the safe position. Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the safe position is prohibited. Where possible, tagout devices shall be affixed at the same point where the lockout device would be attached.

(4) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe. (The National Electrical Safety Code should be used as a guide in grounding requirements and procedures.) The authorized individual is responsible for placing and tagging and removing or moving temporary protective grounds in accordance with the requirements specified in the hazardous energy control procedures submitted with the Safe Clearance Request form. The responsible official shall establish accounting procedures to track placement, movement, and removal of temporary protective grounds. Placement and removal of temporary protective grounds shall be recorded by the issuing individual. Temporary protective grounds shall be placed after the clearance is issued, and removed prior to release of the clearance. The authorized individual shall request permission from the issuing individual to place grounds at specific locations and to move grounds from those locations.

(5) When there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the energy control procedure is complete.

(6) The authorized individual shall be responsible for the placement of all required physical barriers. In areas not under strict control of personnel involved with the safe clearance and in areas with public access, padlocks or other positive controls shall be installed on the isolation devices along with the appropriate tags. This hazardous energy control procedure will be specified in the request for safe clearance and will be in compliance with lockout/tagout requirements.

(7) At unattended, automatic, or remote controlled stations, the designated representative of the issuing individual is responsible for the proper clearing, tagging, and locking of equipment in accordance with the hazardous energy control procedure. The issuing individual shall be advised at the start and completion of clearing operations. Where no communications facilities are available, prior approval of the clearing

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operations is required and at the first opportunity after completion of clearing operations the issuing individual shall be advised of the time of commencement and completion of clearing. The authorized individual requesting the safe clearance shall verify that the switching, tagging, and locking is correct. Any system operated by a remotely controlled source will be completely isolated such that it cannot be operated by that or any other source. Computer software, or any other type of programming, will not be used to create isolation points.

(8) Prior to starting work on systems which have been locked out or tagged out, the authorized individual shall verify that isolation and de-energizing of the system have successfully been accomplished.

(9) When tagout devices are used, personnel shall be instructed in the following requirements and limitations of tags: Tags must be legible and understood by all authorized individuals and affected and incidental personnel; tags and their means of attachment must be made of materials which will withstand the environments and conditions encountered in the workplace; tags shall be securely attached to energy isolating devices so that they cannot become inadvertently or accidentally detached during use; tags shall not be removed without authorization of the authorized individual and shall never be bypassed, ignored, or otherwise defeated; and tags are essentially warning devices affixed to energy isolating devices and do not provide the physical protection that is provided by a lock; tags may evoke a false sense of security.

f. Group lockout and tagout. When servicing or maintenance is performed by a crew, craft, department, or other group of personnel, they shall utilize a procedure which affords them a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout and tagout shall be conducted in accordance with the procedures required by paragraph 7b and include the following requirements:

(1) Each person working under the group safe clearance shall sign the master tag or work permit verifying he/she fully comprehends the details of the job, the energy isolation devices actuated, and the lockout or tagout devices installed.

(2) Primary responsibility for a set number of personnel working under the protection of a group lockout or tagout device, and for the device itself, shall be vested in a principal authorized individual. The principal authorized individual shall ascertain the exposure status of individual group members with

regard to the lockout or tagout of the system. Exposure status of each group member shall be monitored by having each person sign in, recording date, time, and initials on a master tag or work permit at the start of a job, and sign out when leaving the job. Changes to any energy isolating device, including temporary removal of a lock or tag, shall not be permitted until each individual group member has been notified and is clear of any possible danger resulting from the change.

(3) Each principal authorized individual shall affix a lock on each lockable energy isolation device. Each principal authorized individual shall place the key or keys into a group lockbox, or comparable apparatus, secure the lockbox with a personal lock prior to beginning work and remove these devices promptly upon completion of his/her portion of the work. Energy isolation devices that are not capable of being locked shall have a tag placed on the device identifying each principal authorized individual.

(4) When more than one crew, craft, department, etc. are involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized individual designated to coordinate affected work forces and ensure continuity of protection.

(5) As an alternative to the group lockout and tagout method described above, each individual working on the equipment shall place a personal lock on a group lockbox and a personal tag on each energy isolation device required to provide protection during the specific work being performed.

g. Temporary removal of lockout or tagout devices on energized equipment.

(1) In situations where lockout or tagout devices must be temporarily removed from the energy isolating device and the system energized for testing or repositioning purposes, a standard operating procedure shall be developed and included in the hazardous energy control procedure. Temporary removal of lockout or tagout devices shall be scheduled and fully coordinated in advance with the responsible and issuing individuals. If more than one safe clearance is issued or there are overlapping safe clearances, all responsible parties shall coordinate the operation to assure the safety of all personnel.

(2) The standard operating procedure shall specify the following actions which are to be effected in the following sequence: clearing the system of tools and equipment in accordance with paragraph 9e(1); removal of personnel from the

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area and notification of all affected personnel that the lockout or tagout device will be removed in accordance with paragraph 9e(1) and 9e(2); removal of the lockout or tagout device as specified in paragraph 9f; system energizing and the necessary testing or repositioning; and system isolation and reapplication of hazardous energy control measures to continue servicing or maintenance.

(3) All operation of equipment temporarily removed from lockout or tagout shall be conducted by the issuing individual, unless permission is granted to a designated representative to perform individual operations. At unattended installations, operation of equipment shall be carried out by a designated representative.

(4) Any operation of a system temporarily removed from lockout or tagout shall be scheduled and coordinated in advance with the issuing individual.

9. Safe Clearances.

a. All safe clearances shall be issued by the issuing individual designated by the responsible official. Upon receipt of a safe clearance request, the issuing individual will determine whether -

(1) an adequate analysis of the type, magnitude, and hazards of the energy to be controlled has been conducted and all hazardous energy control points have been identified;

(2) the proposed procedure will safely control all hazardous energy and, in the case of multiple energizing points, at all potential energizing points;

(3) the proposed procedure will be applied and released in a safe manner; and

(4) the authorized and affected individuals have an adequate knowledge of the type, magnitude, and hazards of the energy to be controlled and the proposed control procedure.

b. Upon approval of a safe clearance request, the issuing individual will issue the safe clearance to the authorized individual. If possible, safe clearances shall be issued in person. In the event personal contact is impossible between the issuing and authorized individuals, other means of communication may be used provided these means are approved by the responsible official.

c. When the issuing individual is at a location other than where the safe clearance is to take place, the issuing individual shall be informed of the start and completion of safe clearance operations. When communication facilities are not available, prior approval of the proposed schedule of clearing operations is required and, at the first opportunity after completion of clearing operations, the issuing individual shall be advised of the actual time of commencement and completion of clearing.

d. The issuing individual (or designated representative) and the authorized individual shall check each detail for safety and shall assure that isolation points are properly positioned and tagged and/or locked.

e. Before lockout or tagout devices are removed and energy is restored to the system, the following actions shall be taken -

(1) the work area shall be 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; and

(2) affected personnel shall be notified that the lockout or tagout devices will be removed.

f. With the exception of the following conditions, each lockout or tagout device shall be removed from each energy isolating device by the authorized individual who applied the device. When, due to serious illness or other reason, it is impossible for the authorized individual to effect the release or transfer of a safe clearance, the issuing individual or other person designated by the responsible official shall assume full responsibility for releasing or transferring the safe clearance. Such release or transfer of a safe clearance shall be in accordance with the following (procedures and training for such circumstances shall be developed, documented, and incorporated in the energy control program) -

(1) verification by the issuing individual that the authorized individual who applied the device is not at the facility;

(2) the issuing individual makes all reasonable efforts to contact the authorized individual to obtain permission to remove the lockout or tagout device;

(3) the authorized individual is informed that the lockout or

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tagout device has been removed prior to resuming work at the facility;

(4) the issuing individual advises the person assuming the responsibility of the scope of the safe clearance, the work already performed, and the work to be performed; and

(5) the issuing individual either transfers the safe clearance to a new authorized individual or issues a new safe clearance and cancels the original safe clearance.

g. Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of protection, including the provision for the orderly transfer of lockout or tagout devices between off-going and on-coming personnel, to minimize exposure to hazards from unexpected energizing, or the release of stored energy.

h. At the time of requesting the release of a safe clearance, the authorized individual shall report to the issuing individual that all equipment is ready for service and personnel are in the clear.

i. Safe clearances shall be promptly released by the authorized individual upon completion of the work for which the safe clearance was issued.

j. Safe clearances on tie lines and supply lines to and from outside utilities or a power marketing agency will be handled between the issuing individual and the dispatching organization of the utility, marketing agency, or the system load dispatcher as may be appropriate. When developing procedures in accordance with this paragraph, the procedures shall be consistent with good operating practices and the requirements of this regulation.

k. Requests for and records of safe clearance.

(1) Requests for safe clearance and release of safe clearance shall be definite and specific and shall be recorded on ENG Form 1927-R, Safe Clearance Request (see Appendix B). Each safe clearance shall be assigned a number which will be used for identification when issuing and releasing safe clearances; clearances shall be numbered consecutively.

(2) When standard detailed procedures (see paragraph 7b) are applicable to the safe clearance, the standard procedure number and title can be entered on the Safe Clearance Request form and a copy of the standard procedures attached to the form in lieu of

entering the details on the form. A copy of the standard procedures will be furnished to the person receiving the safe clearance and the detailed instructions followed when determining that the clearance is complete and safe. One or more forms, as necessary will be used for each safe clearance. The forms will be supplementary to the station log at those projects which maintain such logs as a permanent record.

(3) Requests for safe clearance using routine safe clearance procedures may be made verbally. In addition, the issuing individual shall repeat back to the authorized individual the equipment to be cleared, the time the safe clearance is desired, the extent of the safe clearance, the work to be performed, the estimated time to complete the operation, and the time required to vacate the safe clearance and return the equipment to operation in case of emergency.

(4) Requests for safe clearance shall be submitted to the issuing individual sufficiently in advance of the work schedule to permit completion of all arrangements and operations prior to the proposed safe clearance time.

(5) Each facility shall maintain a safe clearance log. All safe clearances will be entered into the log as requested, issued, and released. All actions relative to a safe clearance shall be entered in the appropriate permanent log in red ink: at locations where there is not a log book, ENG Form 1927-R will be used. When issuing safe clearances, the following data will be entered: Safe clearance number; purpose of the safe clearance and system to be cleared; date and time (in military time) of issue; names of individuals issuing and receiving the safe clearance. When releasing safe clearances, the following data will be entered: safe clearance number; date and time (in military time) of release; names of individuals issuing and receiving the release authorization. Upon releasing a safe clearance, the word "RELEASED" shall be written or stamped across the corresponding log entries.

(6) Records of safe clearance shall be maintained locally for at least two years.

10. Caution Orders.

a. Caution orders are issued to direct attention to abnormal, hazardous, or unusual conditions or to special operating instructions to be followed. Caution orders shall be issued at any time equipment may be endangered by the operation of automatic controls or the operation of equipment adjacent to that being worked on. Caution orders shall not be used in lieu

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of hazardous energy control procedures.

b. Each caution order shall be assigned a number using an "X" as a prefix. Caution orders shall be numbered consecutively.

c. Caution orders shall be issued and released in accordance with the procedures outlined for the issue and release of safe clearances.

d. Caution orders will be logged in accordance with the procedures outlined for safe clearances, except that black or blue ink will be used instead of red ink. The data entered for issue and release will conform to the data required for safe clearances.

e. 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.

f. ENG Form 1924, Caution Order Tag, will be properly completed and attached to appropriate control devices and equipment in the same manner as Danger - Do Not Operate tags.

11. Periodic Inspections and Review. Periodic, unscheduled (at least annual) inspections shall be conducted to ensure that all requirements of the hazardous energy control procedures are being followed. The responsible official shall certify that the periodic inspections have been performed: the certification shall specify the system on which the energy control procedures were utilized when inspected, the date of the inspections, the names of personnel performing and included in the inspections.

a. Periodic inspections of hazardous energy control procedures shall be conducted by authorized individuals other than those utilizing the specific energy control procedure being inspected.

b. Periodic inspections of hazardous energy control procedures shall include a review between the inspector and each individual involved in the safe clearance being inspected to assess that person's knowledge of, and responsibilities under, the hazardous energy control program and procedures. This review shall include the limitations of tagout devices (see paragraph 8e(9)).

c. Any deficiencies shall be documented and appropriate measures implemented to correct the deficiencies and to ensure future compliance.

d. Documentation (signed by the inspectors) of the inspections shall be maintained at the facility. These inspections shall strive for consistency in format and content between facilities and shall help assure that the policies and procedures meet all requirements.

e. Annual review of hazardous energy control programs shall be conducted by the district safety and occupational health office in conjunction with the responsible functional element (e.g., Hydropower Branch, Navigation Branch, Recreation Branch).

12. Training.

a. Training shall be provided to ensure that the purpose and procedures of the energy control program are understood by all personnel and that personnel possess the knowledge and skills required for the safe application, usage, and removal of energy controls. All employees involved with hazardous energy control procedures shall have initial training and must demonstrate adequate working knowledge of hazardous energy control policy and local programs and procedures prior to placement on the list of issuing and authorized individuals. All training shall be documented with the documentation maintained at the project for at least three years.

(1) Each authorized individual and issuing official shall receive training in the recognition of hazardous energy sources, the type and magnitude of energy available in the workplace, and the methods and means for energy isolation and control.

(2) Each affected person shall be instructed in the purpose and use of the energy control procedures.

(3) All incidental personnel shall be instructed about the procedures and about prohibitions relating to restarting or re-energizing systems which are locked or tagged out.

b. When tagout systems are used, personnel shall also be trained in the limitations of tags (see paragraph 8e(9)).

c. All personnel shall be retrained in hazardous energy control procedures. Retraining shall be provided -

(1) for all authorized and affected individuals and issuing officials whenever there is a change in their job assignments, a change in systems or processes that present a new energy control hazard, or a change in energy control procedures;

(2) whenever a periodic inspection reveals, or there is

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reason to suspect the presence of, deviations from or inadequacies in the person's knowledge or use of energy control procedures; and

(3) at least annually.

d. The responsible official shall certify and document all training and retraining. Certification shall contain such information as the name of the person, the time, date, and location of training, the name of the trainer, etc.

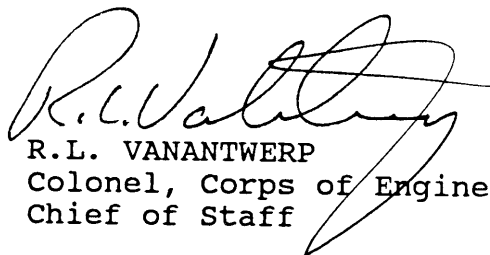
13. Outside Personnel. Whenever the activities of outside servicing (including contractor) personnel involve the control of hazardous energies or may be affected by USACE safe clearance activities:

a. the responsible official and the outside employer shall inform each other of their respective energy control procedures, coordinate energy control procedures, and ensure that their personnel understand and comply with restrictions of each other's energy control procedures; and

b. a Preparatory inspection with USACE and outside servicing personnel shall be conducted to ensure that all affected personnel understand the energy control procedures and the hazards involved.

FOR THE COMMANDER:

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R.L. VANANTWERP
Colonel, Corps of Engineers
Chief of Staff

APPENDIX A

Definitions

Affected person - an employee 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 who is designated in writing by the responsible official to request, receive, and implement energy control procedures. The authorized individual shall have knowledge of the type, magnitude, and hazards of the energy involved and the methods to be used to control the energy.

Caution order - 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) - records information pertinent to each caution order issued.

Caution Order Tag, ENG Form 1924 (see Appendix B) - a tag which is attached to equipment to implement the caution order procedure.

Danger - Do Not Operate Tag, ENG Form 1925 (see Appendix B) - a tag for attaching to each operational control point of equipment or entry point to an area requiring a safe clearance. Computer generated labels for attachment to these tags are authorized as long as the tag retains compliance with the requirements for tagout devices.

Electrical equipment - any device which produces, consumes, stores, transmits, or converts electrical energy.

Electrical line - any conductor used in the transmission of electrical energy from one point to another.

Energy isolation 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,

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pneumatic, chemical, thermal, nuclear, stored, or other energy.

Full personnel protection - when a tagout device is used in place of a lockout device, full personnel protection is provided when (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.

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 or apparatus used during group lockout into which keys from the lockout devices securing the machine or equipment are inserted and which is secured by personal locks by each primary authorized individual.

Hazardous energy control procedure (safe clearance procedure) - the written procedure which clearly and specifically identifies the hazardous energy sources and outlines the scope, purpose, responsibilities, and procedural steps for lockout and tagout and the requirements for testing the effectiveness of energy control measures to be utilized for the control of hazardous energy from stated sources.

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

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

Issuing 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., he may be the operator in charge of a shift at a powerhouse or substation, the supervisory engineer of a project or facility, or other supervisory person having operational control of systems to be placed under hazardous energy control procedures.

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

Lockout device - a device that utilizes a positive means, such as a key lock, to hold an energy isolating device in the safe position and prevent the energizing of a system.

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.

Pressure systems - all piping, tubing, valves, controls, and other devices which operate or are maintained above atmospheric pressure. Also, see definition of vacuum systems.

Principal authorized individual - an authorized individual who oversees or leads a crew, craft, or other group of workers during group lockout and tagout.

Responsible official - the person in charge of the project or facility who designates the issuing and authorized individuals and who approves and directs the hazardous energy control program.

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

Safe clearance - a definite operating arrangement whereby an authorized individual, acting individually or as a representative of a crew, removes designated equipment from service by lockout or tagout. A device or point under safe clearance does not necessarily indicate a zero energy state at that device or point.

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When issued, the safe clearance is the authorization to perform specified work in accordance with the limits of the safe clearance. Safe clearance involves the following general steps:

- 1 - request for safe clearance by an authorized individual
- 2 - accomplish requirements for safe clearance (isolation, guarding, grounding)
- 3 - safe clearance issued
- 4 - perform work
- 5 - clear work area of tools and workers
- 6 - release of safe clearance requested
- 7 - release safe clearance and return equipment to service

Safe clearance procedure/program - same as hazardous energy control procedure/program.

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

Stored energy - energy (electrical, mechanical, or chemical) 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 and their subsystems.

Tagout - a form of hazardous energy control procedure utilizing the placement of a tag on an energy isolating point, in accordance with established hazardous energy control procedures, to indicate that the energy isolating point and the equipment being controlled may not be operated until the tag is removed or a temporary lift is performed.

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

Temporary removal (temporary lift) - the authorized act of working on or operating equipment while it is energized and with the removal of hazardous energy control devices. Temporary lifts must be explicitly detailed in the safe clearance request form and have authorization of the responsible and issuing individuals.

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Vacuum systems - all piping, tanks, tubing, valves, controls, and other devices which operate or are maintained below atmospheric pressure.

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

APPENDIX B

Facsimile of Prescribed Forms and Tags

ENG Form 1927-R, Safe Clearance Request (see page B-2)

ENG Form 1928-R, Caution Order Record (see page B-3)

ENG Form 1924, Caution Order Tag (see page B-4)

ENG Form 1925, Danger - Do Not Operate Tag (see page B-5)

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LOCATION	CORPS OF ENGINEERS SAFE CLEARANCE REQUEST ER 385-1-31		CLEARANCE NUMBER
AUTHORIZED EMPLOYEE (NAME/TITLE) _____ (LOCATION/PHONE) _____	ISSUING EMPLOYEE (NAME/TITLE) _____ (LOCATION/PHONE) _____		
DESCRIPTION OF SYSTEM AND HAZARDS TO BE CLEARED _____			
PURPOSE OF CLEARANCE _____			
NAME AND LOCATION OF POINT OF CONTACT _____			
ESTIMATED TIME/DATE FOR COMPLETION OF WORK _____			
ESTIMATED TIME TO RETURN EQUIPMENT TO SERVICE IN AN EMERGENCY _____			
PROCEDURAL STEPS FOR SHUTTING DOWN, ISOLATING, BLOCKING, AND _____ SYSTEM TO CONTROL HAZARDOUS ENERGY			
PROCEDURAL STEPS AND RESPONSIBILITIES FOR PLACEMENT AND TRANSFER OF LOCKOUT/TAGOUT DEVICES			
PROCEDURAL STEPS AND RESPONSIBILITIES FOR _____ AND TAGGING, AND MOVING OR REMOVING AND UNTAGGING, PROTECTIVE GROUNDS			
REQUIREMENTS FOR TESTING _____ ITEM TO VERIFY EFFECTIVENESS OF ISOLATION AND LOCKOUT/TAGOUT DEVICES			
MEANS TO ENFORCE COMPLIANCE WITH PROCEDURES _____			
CLEARANCE ISSUED TO _____ DATE _____ TIME _____ BY _____			
CLEARANCE RELEASED BY _____ DATE _____ TIME _____			
CLEARANCE REMOVED BY _____ DATE _____ TIME _____			

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ENG FORM 1927-R, Aug 94

REPLACES ENG FORM 1927, May 91
PREVIOUS EDITIONS MAY BE USED

PROPONENT: CESO-E

Figure B-1. Safe Clearance Request, ENG Form 1927-R

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DEPARTMENT OF THE ARMY  CORPS OF ENGINEERS ENG FORM 1924, Aug 94 CAUTION ORDER TAG	CAUTION ORDER NO. _____			
	STATION _____			
	LINE OR EQUIPMENT _____			
	CAUTION HAZARDS _____			
	SPECIAL INSTRUCTIONS _____			
	<i>WAIT MINUTES BEFORE RECLOSING</i>			
		SIGNATURE	TIME	DATE
	REQUESTED BY			
	ORDERED ON BY			
	PLACED BY			
RELEASED BY				
ORDERED OFF BY				
REMOVED BY				

PREVIOUS EDITIONS ARE OBSOLETE


 CAUTION Conditions are abnormal or this equipment is being operated in an unusual manner. Operators will read comments on the front of this card and act accordingly. Use caution at all times. No operation shall take place without a signed record of time and date of the action.	SIGNATURE	TIME	DATE

Figure B-3. Caution Order Tag, ENG Form 1924

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