

SECTION 12

CONTROL OF HAZARDOUS ENERGY

12.A GENERAL

12.A.01 When working on or near any system that produces, uses, or stores hazardous energy, a hazardous energy control program (HECP) is required see 12.B. Hazardous energy is any energy, including but not limited to mechanical (e.g., power transmission apparatus, counterbalances, springs, pressure, gravity), pneumatic, hydraulic, electrical, chemical, nuclear, and thermal (e.g., high or low temperature) energies, that could cause injury to employees.

a. USACE-owned/operated facilities and activities shall comply with ER 385-1-31 The Control of Hazardous Energy and applicable regional HECP and any local supplements in lieu of this section.

➤ **EXCEPTION: When a site is controlled by a contractor and USACE employees are affected by contractor managed HECP (e.g., QA's on construction sites, etc.), they shall comply with the contractor's HECP.**

b. On contractor controlled sites the contractor shall develop an HECP in accordance with this Section as well as all requirements of 1910.147, ANSI Z244.1, and ANSI A10.44.

c. When contractor work involving hazardous energy will be performed at or on a USACE-operated facility, the following coordination must occur:

(1). The GDA and the Contractor shall fully coordinate all control activities with one another throughout the planning and implementation of these activities. Each shall inform the other of their HECPs and Hazardous Energy Control (HEC) procedures, ensure that their own personnel understand and comply with rules and restrictions of the procedures agreed upon to be used for the

EM 385-1-1
XX Jun 13

job, and ensure that their employees affected by the hazardous energy control activity are notified when the procedural steps outlined in the HECF are to be initiated.

(2) When Contractors are planning the use of HEC procedures, they shall submit their HECF to the GDA for acceptance. Implementation of HEC procedures shall not be initiated until the HECF has been accepted by the GDA. The Prime Contractor, as the Controlling Contractor, is also responsible for the HEC procedures of all their sub-contractors.

~~12.A.01 This Section shall apply to contractor-managed Hazardous Energy Control Programs (HECF) only, as well as all requirements of 1910.147, ANSI Z244.1, and ANSI A10.44. When a site is controlled by a contractor and USACE employees are affected by contractor-managed HECF (e.g., QA's on construction sites, etc.); they shall comply with the contractor's HECF.~~

~~12.A.02 USACE-owned/operated facilities that involved hazardous energy shall comply with ER 385-1-31, the applicable regional HECF and any local supplements.~~

~~12.A.03 When contractor work involving hazardous energy will be performed at or on a USACE-operated facility, the following coordination must occur:~~

~~a. The GDA and the Contractor shall fully coordinate all control activities with one another throughout the planning and implementation of these activities. Each shall inform the other of their HECFs and Hazardous Energy Control (HEC) procedures, ensure that their own personnel understand and comply with rules and restrictions of the procedures agreed upon to be used for the job, and ensure that their employees affected by the hazardous energy control activity are notified when the procedural steps outlined in the HECF are to be initiated.~~

~~b. When Contractors are planning the use of HEC procedures, they shall submit their HECF to the GDA for acceptance.~~

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Implementation of HEC procedures shall not be initiated until the HEC has been accepted by the GDA. The Prime Contractor, as the Controlling Contractor, is also responsible for the HEC procedures of all their sub-contractors.

12.A.02 A preparatory meeting and inspection with the GDA and Contractor personnel shall be conducted to coordinate HEC activities. ~~to insure that all affected employees understand the energy hazards and the procedures for their control.~~ This meeting/inspection shall be documented.

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a. Employees shall be trained and tested prior to working on Corps' Facilities where the Corps' HEC is in use to ensure that they are knowledgeable of the procedures. Contractors shall ensure that all of their employees and sub-contractors are knowledgeable of their HECs.

b. When HEC procedures affect both USACE and Contractors, USACE and Contractor authorized personnel will participate ~~clearance holders will participate in the preparatory inspection, to ensure that HEC programs and procedures are in place and coordinated.~~ 12.A.04 Systems with energy isolating devices that are capable of being locked out shall be locked out. If an energy isolating device is not capable of being locked out, the HEC procedures shall use tagout providing full personnel protection. → See 12.A.11.c.

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~~12.A.05 Locks must always be used when the clearance involves equipment that is accessible by the public.~~

~~12.A.06 All equipment shall be covered by a safe clearance (or lockout/tagout procedures) and all energy sources shall be controlled before performing service or maintenance on equipment in which the unexpected energizing, startup, or release of stored energy could occur and cause any of the following: Personal injury, property damage, loss of content, loss of protection, loss of capacity, or harm to the environment.~~

EM 385-1-1
XX Jun 13

~~12.A.07 A preparatory meeting and inspection with the GDA and Contractor personnel shall be conducted to insure that all affected employees understand the energy hazards and the procedures for their control. This meeting/inspection shall be documented.~~

~~a. Employees shall be trained and tested prior to working on Corps' Facilities where the Corps' HEC is in use to ensure that they are knowledgeable of the procedures. Contractors shall ensure that all of their employees and sub-contractors are knowledgeable of their HECs.~~

~~b. When HEC procedures affect both USACE and Contractors, USACE and Contractor clearance holders will participate in the preparatory inspection, verifying that equipment has been properly cleared and that locks and tags have been placed as appropriate.~~

~~12.A.08 Lockout and tagout shall be performed only by Authorized employees.~~

~~12.A.09 All employees affected by the lockout/tagout shall be notified, before and upon completion of, the application and removal of locks or tags.~~

~~12.A.10 Coordination (Shift/Schedule Change). Provisions shall be made to ensure the continuity of lockout/tagout protection during shift or personnel change.~~

~~12.A.11 Locks and tags.~~

~~a. Systems with energy isolating devices that are capable of being locked out shall be locked out.~~

~~b. Locks must always be used when the clearance involves equipment that is accessible by the public.~~

~~c. If an energy isolating device is not capable of being locked out, the HEC procedures shall use tagout providing full personnel protection as follows:~~

~~(1) All tagout requirements of this regulation and of the HEC procedures shall be complied with;~~

~~(2) The tag shall be attached to the same location, if possible, that the lock would have been attached. If this is not possible then the tag shall be attached as close a 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 that 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 commensurate with that provided by a locks.~~

~~12.B. A-12- Hazardous Energy Control Program (HECP). The HECP shall clearly and specifically outline the scope, purpose, authorization, roles and responsibilities, rules, and techniques to be used for the control of hazardous energy, including, but not limited to, the following:~~

~~a. HEC procedures shall be developed in the HECP. The HECP shall clearly and specifically outline the scope, purpose, authorization, responsibilities, rules, and techniques to be used for the control of hazardous energy, including, but not limited to, the following:~~

~~(4) a. HECP procedures (i.e., site/ equipment specific steps to control the energy source). shall be developed in the HECP.~~

~~A statement of the intended use of the procedure;~~

~~(2) b. Means of coordinating and communicating HEC activities;~~

~~(3) c. Procedural steps and responsibilities for shutting down, isolating, blocking, and securing systems to control hazardous energy;~~

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d. 4) Procedural steps and responsibilities for the placement, removal, and transfer of ~~locks, out and tagout devices, and other control devices;~~

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e. ~~(5)~~ Procedural steps, responsibilities and a means of accounting for placing and removing personal protective grounds;

f. ~~(6)~~ Procedural steps, responsibilities and requirements for testing the system to verify the effectiveness of isolation and control, and lockout and tagout devices;

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g. ~~(7)~~ Procedural steps and responsibilities for transfer of clearances when and if necessary; 12.A.10 Coordination (Shift/Schedule Change). Provisions shall be made to ensure the continuity of lockout/tagout hazardous energy control protection during shift or personnel change.

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~~Procedural steps and responsibilities for Multi-Shift Safe Clearances;~~

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h. ~~(9)~~ A description of any emergency ies procedures, that may occur during system lockout/tagout and procedures for safely responding to those emergencies; and

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i. ~~(10) The means to enforce compliance with the procedures. Procedural steps and responsibilities for daily inspections (conducted to ensure shall be conducted that all requirements of the HECP procedures are being followed and documented) and periodic inspections (shall be documented and shall specify the system where the HEC procedures were inspected, the date of the inspection, the names of employees performing and included in the inspections, and any deficiencies in complying with the HEC procedures).and~~

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j. The means to enforce compliance with the HECP. procedures.

~~12.C PERIODIC INSPECTIONS~~

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12.~~C.B~~ TRAINING

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12.~~C.B~~.01 Training ~~applicable to the roles and responsibilities~~ shall be provided to ensure that the purpose and function of the HEC-~~P~~ procedures are understood by employees and that employees possess the knowledge and skills required for the safe application, usage, and removal of HEC devices.

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~~a. Each Authorized Employee 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.~~

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~~b. Each Affected employee shall be instructed in the purpose and use of the HEC procedures.~~

~~c. All incidental personnel shall be informed of the procedures and prohibitions relating to restarting or reenergizing systems which are locked or tagged out.~~

~~12.C.02d.~~ When tagout systems are used (only when lockout is not possible), employees shall be trained in the limitations of tags.

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12.~~C.B~~.03 Employees shall be retrained in HEC-~~P~~ procedures whenever:

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a. 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 HEC-~~P~~ procedures; or

b. Periodic inspection reveals, or there is reason to suspect the presence of, inadequacies in or deviations from the employee's knowledge or use of HEC-~~P~~ procedures.

EM 385-1-1
XX Jun 13

~~12.C.B.03-04 The Training and retraining shall be documented and shall contain information, supervisor shall certify and document all training and retraining. Certification shall contain such information as the names of employees trained; the time, date, and location of training; the name of the trainer, etc.~~

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~~12.C PERIODIC INSPECTIONS~~

~~12.C.01 Daily inspections shall be conducted to ensure that all requirements of the HEC procedures are being followed.~~

~~12.C.02 Periodic Inspections shall be documented and shall specify the system where the HEC procedures were inspected, the date of the inspection, the names of employees performing and included in the inspections, and any deficiencies in complying with the HEC procedures.~~

~~12.D ENERGY ISOLATING DEVICES AND PROCEDURES~~

~~LOCKS AND TAGS~~

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~~12.D.01 Energy Isolating device.~~

~~a. Energy isolating device is a mechanical device that, when utilized or activated, physically prevents the transmission or release of energy; including but not limited to the following:~~

~~(1) A manually operated electrical circuit breaker;~~

~~(2) A disconnect switch;~~

~~(3) A manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently;~~

~~(4) A line valve, bolted blank flange and bolted slip blinds;~~

~~(5) A block (e.g., a safety block or cribbing); and~~

(6) Any similar device used to block or isolate energy.

b. Push-buttons, selector switches, safety interlocks, programmable logic controllers, software programming, and other control circuit type devices are NOT energy isolating devices.

12.D.03 Locks or other positive means control must always be used when the energy isolation clearance involves equipment that is accessible by the public.

12.D.04 All equipment shall be covered by an HECP procedure ~~safe clearance~~ and all energy sources shall be controlled before performing service or maintenance on equipment in which the unexpected energizing, startup, or release of stored energy could occur and cause any of the following: Personal injury, property damage, loss of content, loss of protection, loss of capacity, or harm to the environment.

12.E. LOCKS AND TAGS.

12.E.01 ~~D.02~~ Systems with energy isolating devices that are capable of being locked out shall be locked out. If an energy isolating device is not capable of being locked out, the HECP procedures shall use tagout providing full personnel protection.→

a. ~~(1)~~ All tagout requirements of this regulation and of the HEC procedures shall be complied with;

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

c. ~~(3)~~ Additional means (e.g., placement of the tag in a manner that 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.)

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~~shall be employed to provide a level of protection commensurate with that provided by a locks.~~

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~~d. When tags only must be used (the use of locks is not possible), employees shall be instructed in the following requirements and limitations of tags.~~

~~(1) Tags must be legible and understood by all authorized and affected employees and incidental personnel.~~

~~(2) Tags and their means of attachment must be made of materials that will withstand the environments encountered in the workplace.~~

~~(3) Tags shall be securely attached to energy isolating devices so that they cannot become inadvertently or accidentally detached during use.~~

~~(4) Tags shall not be removed without authorization of the authorized employee and shall never be bypassed, ignored, or otherwise defeated.~~

~~(5) 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.~~

~~12.E.02 A.08 Lockout and tagout shall be performed only by Authorized employees.~~

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~~12.E.03 A.09 All employees affected by the lockout/tagout shall be notified, before and upon completion of, the application and removal of locks or tags.~~

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~~a. Systems with energy isolating devices that are capable of being locked out shall be locked out.~~

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~~b. Locks must always be used when the clearance involves equipment that is accessible by the public.~~

~~e. If an energy isolating device is not capable of being locked out, the HEC procedures shall use tagout providing full personnel protection as follows:~~

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12.E.04.D.01 Locks and tags shall:

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a. Be capable of withstanding the environment that they are exposed to for the maximum period of time the exposure is expected, and

b. Indicate the identity of the employee applying the device.

~~c. Locks shall, in addition to the requirements of 12.E.04 D.01, be substantial enough to prevent removal without the use of excessive force or unusual techniques (such as with the use of bolt cutters).~~

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~~d. Tags shall, in addition to the requirements of 12.E.04 D.01, meet all of the following requirements:~~

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(1) a. Have a standardized (within a project) print and format;

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(2) b. Be constructed and printed so that exposure to weather conditions, ultraviolet (UV) light, wet or damp locations, or corrosive environments will not cause the tag to deteriorate or the message to become illegible;

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(3) c. Be attached by means that 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 lb (22.6 kg); and have the basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie; and

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(4) d. Warn against the hazardous condition resulting from system energization and include a legend such as "**DANGER - DO NOT START, OPEN, CLOSE, ENERGIZE, OPERATE,**" etc.

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12.E.05 Application And Removal Of Locks And Tags

a. The authorized employee shall ensure that all energy isolating devices needed to control energy to or within the system are identified and that the system is shut down, isolated, blocked and secured in accordance with HEC**P** procedures.

b. Any system operated by a remotely controlled source will be completely isolated such that it cannot be operated by that or any other source.

c. The authorized employee shall affix locks and/or tags to each energy isolating device in accordance with the HEC**P** procedures.

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~~12.E.F.04 In areas with public access, not under strict control of personnel involved with the HEC**P** activities, locks or other positive controls must be installed on the isolation devices.~~

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d When there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the energy control procedure is complete.

e Before starting work on systems that have been locked/ tagged out, the authorized individual shall verify that isolation and de-energization of the system have successfully been accomplished.

12.E.06 Personal Protective Grounds. Following the application of locks or tags to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, ~~disconnected,~~ restrained, discharged, or otherwise rendered safe.

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a. Protective grounds shall be identified and accounted for in some manner, as identified in the Contractor's HEC**P** and procedures.

b. The authorized employee (or his designee) is responsible for ensuring the control of residual energy and for placing and removing personal protective grounds in accordance with the Contractor's HEC**P** and procedures.

~~12.E.06 When there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the energy control procedure is complete.~~

~~12.E.07 Before starting work on systems that have been locked/ tagged out, the authorized individual shall verify that isolation and de-energization of the system have successfully been accomplished.~~

~~12.E.08 When tags only must be used (the use of locks is not possible), employees shall be instructed in the following requirements and limitations of tags:~~

~~a. Tags must be legible and understood by all authorized and affected employees and incidental personnel.~~

~~b. Tags and their means of attachment must be made of materials that will withstand the environments encountered in the workplace.~~

~~c. Tags shall be securely attached to energy isolating devices so that they cannot become inadvertently or accidentally detached during use.~~

~~d. Tags shall not be removed without authorization of the authorized employee and shall never be bypassed, ignored, or otherwise defeated.~~

~~e. 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.~~

12.E.07 Before locks or tags are removed and energy restored to the system, the authorized individual shall ensure that the following actions have been taken:

a. The work area has been inspected and all nonessential items (e.g., tools and materials) have been removed from the system, the system components are operationally intact, and all

EM 385-1-1
XX Jun 13

employees have been safely positioned or removed from the area; and

b. All affected individuals have been notified that the locks or tags are about to be removed.

12.E.08 With the exception of the following conditions, each lock and/or tag shall be removed from each energy-isolating device by the authorized individual or systems operator who applied the device. When this employee is not available, the device(s) may be removed by another individual appointed by, and under the direction of the Contractor Project Manager or Contractor designated authority, provided that the following procedures are complied with:

- a. The Contractor ensures that the individual appointed to remove locks and/or tags is knowledgeable of the scope and procedures of the safe clearance.
- b. This individual and the requirements for transferring removal authority to him/her from the authorized individual are listed in the hazardous energy control plan.
- c. Verification by the Contractor that the authorized employee who applied the device is not at the facility.
- d. The Contractor designated authority makes all reasonable efforts to contact the authorized employee to inform him that the locks and/or tags are to be removed; and if a group clearance is involved, then an attempt must be made to have all affected persons sign off on the clearance or they must be contacted by phone. If contact cannot be made, then the lift may be made only after all necessary precautions are taken.
- e. The authorized employee, upon returning, must be immediately notified of the lift prior to resuming their work.