APPENDIX J
CONTROL OF HAZARDOUS ENERGY
(LOCKOUT/TAGOUT)

1. Purpose: This appendix defines the minimum requirements in establishing a program and utilizing procedures for affixing appropriate lockout or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energizing, start-up, or release of stored energy in order to prevent injuries to employees within the Buffalo District.

2. Applicability: This appendix applies to the control of energy during servicing and/or maintenance of equipment by government and contractor employees within the Buffalo District.

3. References:

a. ER 385-1-31

b. EM 385-1-1

c. 29 CFR 1910.147

4. Definitions:

a. Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy.

b. Energy Source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

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

d. Lockout Device - A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of equipment. Included are blank flanges and bolt slip blinds.

e. Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to

indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

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

g. Zero Energy State - Before any piece of equipment can be serviced or worked on in any way, it must be in a "zero energy state." This means no energy is coming into or is inside the equipment. Equipment that's just turned off is not at a zero energy state because it could easily be turned on again. Isolating the energy source and using locks and tags ensures the equipment reaches and stays at a zero energy state.

5. General:

a. Lockout/Tagout:

(1) If an energy isolating device is not capable of being locked out, the energy control program shall utilize a tagout system.

(2) If an energy isolating device is capable of being locked out, the energy control program shall utilize lockout, unless it can be demonstrated that the use of a tagout system will provide a level of safety equivalent to that obtained by using a lockout system.

(3) Whenever replacement or major repair, renovation or modification of equipment is performed, and whenever new equipment is installed, energy isolating devices for such equipment shall be designed to accept a lockout device.

b. Equipment may be powered by different types and/or combinations of energy sources:

(1) Electrical energy is the flow of currents through wires and circuits.

(2) Hydraulic energy is any type of liquid, including water, under pressure.

(3) Pneumatic energy is gas, including air, under pressure.

(4) Mechanical energy is potential or "built-up" energy, such as spring energy, that may cause equipment parts to move without warning.

c. Each facility shall have written lockout/tagout procedures which clearly and specifically outline the scope, purpose, authorization, rules, steps and techniques to be utilized for the control of hazardous energy and means to enforce compliance with these procedures. An example listing of steps is enclosed at Section 1 of this appendix for reference.

d. Authorized employees shall demonstrate energy control is in effect prior to any maintenance or service being conducted and submit a request for safe clearance using ENG Form 1927-R.

e. Each facility shall maintain a safe clearance log. All safe clearances will be entered into the log when issued and when released.

f. Protective materials and hardware.

(1) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided for isolating, securing or blocking of equipment from energy sources.

(2) Lockout and tagout devices shall be singularly identified; shall be the only devices used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

(a) Durable. Lockout devices and tag out devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

(b) Tag out devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(c) Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

(3) Standardized. Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format.

(4) Substantial.

(a) Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

(b) Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal.

(5) Identifiable.

(a) Lockout and tagout devices shall indicate the identity of employee applying the device.

(b) Tagout devices shall warn against the hazardous condition if machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

(c) No lockout or tagout device shall be removed by anyone other than the individual who placed the device.

(6) Inspections.

(a) A qualified individual shall conduct a periodic inspection of the energy control procedures at least annually to ensure that established procedures and requirements are being followed.

(b) Periodic inspections shall be performed by an authorized person other than the one(s) utilizing the energy control procedures being inspected.

(c) Periodic inspections shall be conducted to correct any deviations or inadequacies identified.

(d) Periodic inspections shall include a review between the inspector and each authorized and those affected employees regarding the procedures and responsibilities being used.

(e) Periodic inspections will be documented for each piece of machinery or equipment. This certification shall identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and person performing inspection.

6. Responsibilities:

a. Supervisors.

(1) Will establish a program and utilize procedures for appropriate control of hazardous energy (lockout/tagout) for his/her facility.

(2) Will ensure that all necessary personnel receive required training regarding the control of hazardous energy.

b. Safety and Occupational Health Office. Will ensure that all programs involving the control of hazardous energy (lockout/tagout) are in compliance with district, state, and federal regulations.

7. Training: The employer shall provide training to ensure that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. Training shall include:

a. All authorized employees will receive initial and periodic (annual) training in the recognition of applicable hazardous energy sources, the types and magnitude of the energy present in the workplace, and the methods and means necessary for energy isolation and control.

b. All affected employees shall be instructed in the purpose and use of the energy control procedures.

c. All other employees whose work operations are or may be in an area where energy control procedures may be used, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out. This training may be accomplished during regularly scheduled safety meetings.

d. Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

e. Training will be documented. Certification shall contain each employee's name, dates of training, name of person(s) conducted the training, where the training was performed, and the subjects covered.

8. Personal Protection Equipment: All appropriate personnel protective equipment will be used when applying lockout and tagout procedures.

SECTION 1
CONTROL OF HAZARDOUS ENERGY
LOCK OUT/TAG OUT PROCEDURES
STEPS TO SAFETY

1. TRACING THE ENERGY - The energy sources powering the machine or equipment needing work must be located. A floor plan can help the authorized employee trace the flow of energy to its sources.

2. SHUTTING DOWN EQUIPMENT - The on/off switch, starter button, or local disconnect is turned to "off" to shut equipment down. There may be more than one point of shutdown, so all of them must be turned off.

3. ISOLATING THE ENERGY - Isolation devices are applied to all energy sources to block energy from coming into, moving within, or causing unexpected movement of equipment parts.

4. LOCK OUT/TAG OUT - A lock and tag (or a tag by itself) are attached to the isolation device and at other locations if required. The authorized employee may give the locks and tags a quick tug to make sure they're attached securely.

5. RELEASING STORED ENERGY - Equipment may contain stored, or residual, energy that could cause harm if released unexpectedly. To make the equipment safe, stored energy is either released or blocked.

6. TESTING FOR ZERO ENERGY - To make sure that there is zero energy, the authorized employee tries to turn the equipment on. If it comes on, steps 1 through 5 are repeated. If the equipment doesn't start up, the employee can work safely.

7. REMOVING LOCKS AND TAGS - When the work is done, locks and tags are removed by the authorized employee (or by the supervisor, under special circumstances). Afterward, the equipment may be restarted so normal operations can resume.

INDUSTRIAL ACCIDENTS CAN RESULT IN SERIOUS INJURY AND EVEN DEATH TO YOU OR NEARBY WORKERS. BUT YOU CAN HELP PREVENT ACCIDENTS BY WORKING SAFELY AND FOLLOWING ALL LOCK OUT/TAG OUT PROCEDURES. NEVER TAKE SHORT CUTS TO BYPASS THE LOCK OUT, AND NEVER REMOVE SOMEONE ELSE'S LOCK OR TAG UNLESS ESTABLISHED PROCEDURES ARE FOLLOWED.