

LOCKOUT/TAGOUT

1.0 SCOPE

This Performance Assessment Guide for Lockout/Tagout will be used to carry out the oversight responsibility of the U.S. Department of Energy (DOE) Brookhaven Group. This guide was prepared to assist in conducting performance-based assessments of DOE prime contractors and subcontractors to ensure that their lockout/tagout programs identify, disposition, and take corrective action on issues that affect satisfactory facility performance. The goals are to ensure that laboratory employees and the public do not experience injuries and illness as a result of lockout/ tagout activities and that there is little or no economic loss to the Government.

Lockout/tagout assessments will be directed at all prime contractors and subcontractors working at the site. DOE line management must ensure that these contractors comply with DOE Orders and Federal and State regulations. Information developed from this assessment will determine the degree to which this is being done as well as the effectiveness of the laboratory's program.

2.0 ATTRIBUTES AND LINES OF INQUIRY

This section provides lines of inquiry to help assess whether the laboratory has implemented a program that ensures that lockout/tagout requirements are incorporated into line activities. This section will be used to evaluate the laboratory's line organization.

2.1 The laboratory has established a lockout/tagout program.

- Are procedures established to control the lockout/tagout program?
- Are specific written lockout/tagout procedures developed for each machine, equipment, or process?
- Does the program contain measures to ensure potentially hazardous energy or toxic material sources are isolated and rendered inoperative during servicing, maintenance, or modification activities?
- Is the program required in any case where unexpected energizing, startup, release of stored energy, or toxic material can cause injury or equipment damage?
- Does the laboratory s lockout/tagout program have provisions for personnel training?

- Does the organization's lockout/tagout program have provisions for periodic inspections when required?
- Does the laboratory's lockout/tagout program have provisions for enforcing the requirements of the program?

2.2 The organization has defined lockout/tagout use.

- Are locks or tags or both placed on controls when for safety or other administrative reasons regulation must be established?
- Are lockout/tagout devices singularly identified; are they the only devices used for controlling energy; and are they not used for other purposes (e.g., used to lock toolboxes, employee lockers)?
- Does the organization use locks (built-in or external) that render the controls inoperative? Are the keys or combinations or both for the locks controlled?
- If locks are not used, are other methods, such as wiring a control inoperable or using control defeating devices, used?
- Has the organization established tagout as the application of a danger or warning tag on the controls?
- Do the tags indicate that the control is not to be used except under specific conditions?
- Are tags placed on the control that is tagged out, or as close as possible to clearly indicate the condition?
- Are the tags used for hazardous energy control specific for that purpose only and not used for other tagging jobs?

2.3 The laboratory has specific methods for accomplishment of lockout/tagout.

- If an energy-isolating device or a toxic material-isolating device has the capability of being locked out, is it locked out rather than being tagged out?
- If an isolating device cannot be locked out, is it tagged out?
- Is the laboratory's tagout method as effective as lockout with regard to protecting employees? (Note: The laboratory must be able to demonstrate this.)

- If replacement, major repair, renovation, modification, or installation of new machines or equipment is performed, can the new design accept a lockout device?
- Has the laboratory developed and approved a list of components that are required to be locked out? Is the list separate from the standard alignment checklist?
- Has the laboratory established criteria for locking additional components, including any necessary authorizations?
- When key-operated locks are used, is the access to the keys controlled? Are the keys restricted to authorized personnel? Are they readily available when required?
- Are techniques for verifying the position of locked components established? Are position indicators and hands-on checks used whenever possible?
- Does the laboratory have a method for authorizing and documenting when locked components are unlocked and placed in a position other than the normally locked position?
- Are periodic checks performed to ensure that the locking devices are properly attached and the component is in the correct position?

2.4 Procedures that control the lockout/tagout process are developed and used.

- Are procedures developed, documented, validated, and used for control of the lockout/tagout program?
- Does the procedure clearly and specifically outline the purpose, responsibility, scope, authorization, rules, definitions, and measures to enforce compliance?
- Does the procedure include a specific statement of intent of use?
- Does the procedure include specific steps for shutting down, isolating, blocking, and securing each machine or equipment to control hazardous energy or material?
- Does the procedure include specific steps for the placement, removal, and transfer of the lockout/tagout devices?
- Does the procedure contain specific requirements for testing a machine or piece of equipment to determine and verify the effectiveness of the lockout/tagout or other control methods?

- Are the placement, activation, and removal of lockout/tagout devices recorded? Is the record maintained by the appropriate management to ensure accuracy and completeness?
- Does the laboratory periodically review the lockout/tagout records as guidance for use in program improvement efforts?

2.5 Documentation of a specific procedure for a particular machine or piece of equipment is not required when all the questions in this section can be answered in the affirmative.

- After shutdown, does the machine or equipment have no potential for stored or residual energy or reaccumulation of stored energy that could endanger personnel?
- Does the machine have a single energy source that can be readily identified and isolated?
- Does the isolation and locking out of that energy source completely deenergize and deactivate the machine or piece of equipment?
- Is the machine or equipment isolated from that energy source and locked out during servicing or maintenance?
- Does a single lockout device achieve a locked-out condition?
- Is the lockout device under the exclusive control of the authorized personnel performing servicing or maintenance?
- Are no personnel hazards created by the servicing or maintenance?
- Has the laboratory, in utilizing this exception, had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance?

2.6 The procedures for application of lockout/tagout cover the following elements and actions and are completed in the following sequence.

- Are preparations made for the shutdown of the machine?
- Are personnel informed of the types and magnitude of the energy to be controlled, its hazards, and the method and means to control it?

- Is an orderly shutdown performed using the procedures established for the machine or equipment?
- Are all necessary energy-isolating devices then physically installed or operated in a manner that isolates the equipment from the energy source?
- Are lockout/tagout devices affixed to each isolation device by authorized personnel in a manner that will maintain the device in a safe or off position or clearly indicate that operation of the device is prohibited?
- Is all potentially hazardous stored or residual energy relieved, disconnected, restrained, or otherwise rendered safe?
- Are measures taken to ensure stored energy will not reaccumulate to a hazardous level?
- Finally, are steps taken to verify that isolation and deenergization have been accomplished prior to starting the work?

2.7 The procedures for release of lockout/tagout cover the following elements and actions. These actions are completed prior to removing the lockout/tagout device or devices and restoring the energy supply.

- Are checks made to ensure the machine or equipment components are operationally intact?
- Is the machine or equipment inspected to ensure that all tools and nonessential items have been removed?
- Are steps taken to ensure that the components within the lockout/tagout boundaries are correctly aligned to support operation?
- Is the workspace checked to ensure that all personnel have been safely positioned or removed?
- Are affected personnel notified that the equipment will be energized before the lockout/tagout devices are removed?
- Does the authorized person who applied each lockout/tagout device remove each device and reposition and check the components in a specified sequence?

- Is the removal of locks or tags or both documented and then are the locking/tagging devices returned to and accounted for by the appropriate management or authorized person?
- If the authorized person who applied the lockout/tagout device is not available to remove it, does the contractor have a procedure in place that ensures a level of safety equivalent to having the authorized person remove the device?
- Does the procedure include the following elements:
 - Verification that the authorized person who applied the device is not available?
 - Assurance that all reasonable efforts have been made to inform the authorized person that the device will be removed; and
 - Ensuring that the authorized person is informed of the removal of the lockout device on returning to work and prior to resuming work?

2.8 Protective materials and hardware are in place to support the lockout/tagout program.

- Is appropriate equipment, such as locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware, provided by the laboratory for the lockout/tagout program?
- Are lockout/tagout devices individually identified?
- Does the laboratory prevent the use of lockout/tagout devices for purposes other than the control of hazardous energy during servicing and maintenance of machines and equipment?
- Are the lockout/tagout devices capable of withstanding the environment to which they are exposed for the maximum period of time the exposure is expected?
- Are tags constructed to minimize deterioration of their substance or message when exposed to weather conditions or wet and damp locations?
- Are tags constructed to prevent deterioration when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored?
- Are the laboratory's lockout/tagout devices standardized in at least one of the following criteria: color, shape, or size?
- Does the organization utilize tagout devices with standardized print and format?

- Are lockout devices substantial enough to prevent their removal without the use of unusual techniques or tools (bolt cutters or other metal cutting tools)?
- Are tagout devices and their methods of attachment designed to include but not be limited to the following: non-reusable, attachable by hand, self-locking, and non-releasable, with a minimum unlocking strength of no less than 50 pounds?
- Do lockout/tagout devices indicate the identity of the personnel and the organization applying the device?
- Do tagout devices warn against hazardous conditions if the machine or equipment is energized?
- Are legends such as: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, or Do Not Operate included on the tagout device?

2.9 Procedures and programs are in place to support temporary removal of lockout/tagout devices for testing or positioning of equipment.

- Is the equipment cleared of tools and materials?
- Are personnel removed from the equipment area?
- Is the lockout/tagout device removed per the procedure?
- Is the equipment then energized and the testing or positioning completed?
- Are all systems then de-energized and the lockout/tagout reapplied?

2.10 Provisions are included in the lockout/tagout program for periodic inspections.

- Does the organization conduct periodic inspections of the lockout/tagout program?
- Are periodic inspections performed by authorized personnel other than the personnel utilizing the energy control procedure?
- Are the periodic inspections conducted with the intent of determining if procedures are being followed and to identify and correct any deviations or inadequacies?
- Do the inspections include a review of the responsibilities of personnel utilizing the lockout/tagout procedures?

- Does the organization certify that periodic inspections have been performed, documenting the equipment and procedures involved, dates of inspection, personnel participating in the inspection, and personnel performing the inspection?

2.11 Provisions are included in the lockout/tagout program for use of caution tags.

- Does the organization prevent the use of caution tags as a lockout/tagout device for personnel protection?
- Is the use of caution tags restricted to situations in which a component is functional but requires a precaution or other information prior to being operated?
- Are caution tags uniquely identifiable and different in appearance from other tags used by the laboratory?
- Is the following information included on caution tags: tag number, component name and number, effective date, precaution or information applicable to the situation, and the signature of the authorizing individual and organization?
- Does the laboratory ensure that situations that require special operator or maintenance precautions are brought to the attention of the appropriate management?
- Does the laboratory's program preclude the use of a caution tag when other forms of administrative control (such as procedure changes, placing an operator aid, use of the work control system, or the lockout/tagout process) would be more appropriate?
- Do any of the instructions/precautions on the caution tags deviate from established site operating procedures or technical specifications?
- Does the laboratory maintain a record of all the active caution tags, and is the record available to the appropriate personnel?
- Does the laboratory perform periodic documented reviews of the caution tag record to verify the continued need and applicability of each caution tag and to ensure the record accurately reflects all active caution tags?
- Are caution tags that remain in active status for an extended time (typically longer than 3 months) brought to the attention of appropriate management, and is action taken to resolve the issue requiring a caution tag?
- Is the placement of caution tags documented?

- Are caution tags placed properly so they do not interfere with or obscure indications, switches, or other control devices?
- Are caution tags placed in a position that is readily apparent to personnel before they operate the tagged device?

2.12 The laboratory provides training and communication in support of the lockout/tagout program.

- Does the laboratory provide and document training to ensure that the purpose and function of the lockout/tagout program is understood by all personnel and that they have the knowledge and skills required for safe application, use, and removal of the devices used for lockout/tagout?
- Is each authorized person trained in the recognition of applicable hazardous energy sources, type and magnitude of the energy or materials involved, and the methods to isolate and control the energy source?
- Are the affected personnel instructed in the purpose and use of the lockout/tagout procedures?
- Are other personnel whose work operations are in or may be in an area where lockout/tagout is used trained to the requirements in the procedure, and about the prohibitions relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out?
- When tagout systems are used, are personnel trained in the limitations of tags?
- Do personnel understand that tags are essentially warning devices and do not provide the physical restraint provided by a lock?
- Do personnel understand that tags are not to be removed except by the authorized person (the one who placed the tag and is responsible for it) and that they are never to be bypassed, ignored, or otherwise defeated?
- Are the tags legible and understandable by all affected personnel?
- Are the tags and their means of attachment made of materials that can withstand the environmental conditions?
- Does the training program recognize that tags may evoke a false sense of security and that their meaning needs to be understood?

- Do personnel understand that tags must be securely attached so they cannot be inadvertently or accidentally detached during use?
- When lockout systems are used, are personnel trained in the limitations of locks?
- Do personnel understand that, with a lockout device installed, operation of the facility may be hindered?
- Do personnel understand that locks and chains installed on small instrument lines can contribute to strain (which may not have been considered during the safety analysis)?
- Is retraining provided for all authorized or affected personnel whenever there is a change in job, procedures, machines, equipment, or processes that presents new hazards or when periodic inspection determines that a change is needed?
- Does the laboratory certify that training has been completed and is being kept up to date? Are training records kept that include each person's name and the date of training?

2.13 The laboratory has methods for the notification of personnel in regards to the lockout/tagout program.

- Do laboratory management and the authorized employee notify affected personnel of the application and removal of lockout/tagout devices?
- Is notification given before the devices are applied and after they are removed?

2.14 Provisions are included in the lockout/tagout program for the use of outside contractors.

- Does the organization have a method for ensuring that the requirements of lockout/tagout procedures of both the onsite and offsite organizations are understood by their respective personnel?
- Does the onsite organization ensure that their personnel understand and comply with the restrictions and prohibitions of the offsite organization's lockout/tagout program?

2.15 The lockout/tagout program that has been implemented by the laboratory allows the use of group lockout/tagout.

- When servicing and/or maintenance is performed by a crew, craft, department, or other group, is a procedure used that affords personnel the same level of protection as a personal lockout/tagout device?
- Does the group lockout/tagout procedure require that primary responsibility be vested in an authorized employee for a set number of personnel working under a group lockout/tagout device?
- Does the group lockout/tagout procedure have provisions to allow the authorized employee to ascertain the exposure status of individual group members with regard to the lockout/tagout of the machine or equipment?
- If more than one crew, craft, department, or other group is involved, does the contractor designate overall lockout/tagout control responsibility to an authorized person who is designated to coordinate the affected work groups and ensure continuity?
- Does each authorized employee affix a personal lockout/tagout device on the group lockout device, group lockbox, or comparable device when the employee begins work, and does each employee remove those devices when they stop working on the machine or equipment?

2.16 Provisions are included in the lockout/tagout program for shift or personnel changes.

- Does the laboratory use specific procedures during shift or personnel changes to ensure the continuity of lockout/tagout protection?
- Are provisions provided for the orderly transfer of lockout/tagout protection between offgoing and oncoming personnel?

3.0 STANDARDS AND REQUIREMENTS

3.1 Specific DOE Orders and Standards.

- DOE O 232.1A, "Occurrence Reporting and Processing of Operations Information."
- DOE O 440.1A, "Worker protection Management for DOE Federal and Contractor Employees."
- DOE 2300.1B, "Audit Resolution and Followup."
- DOE 2321.1B, "Auditing of Programs and Operations."

- DOE 5480.19, "Conduct of Operations."
- DOE 5700.6C, "Quality Assurance."

3.2 Title 10 CFR Requirements.

- 10 CFR Requirements, "Quality Assurance Requirements for DOE Nuclear Facilities."

3.3 OSHA Title 29 CFR Requirements.

- Title 29 CFR 1910.147, "The Control of Hazardous Energy (Lockout/Tagout)."
- Title 29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags."

3.4 American National Standards Institute Requirements.

- ANSI Z244.1-1982, "Standard for Personnel Protection, Lockout/Tagout of Energy Sources, Minimum Safety Requirements."

4.0 GUIDANCE TO ASSESSOR

This assessment guide is intended to assist in conducting a performance assessment of lockout/tagout. It is not to be considered as all-inclusive, inflexible, or limiting reasonable assessment concentration when lines of inquiry responses dictate that an area must be more thoroughly probed.