

Hanford Site Lockout/Tagout Procedure

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



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CHANGE SUMMARY

Section	Change Details
General	Revised throughout to implement NFPA 70E 2018 requirements. Reorganized and rearranged sections. Revised language throughout to eliminate redundancy and to enhance clarity, based on training feedback forms and questions from the field. Signature page was removed as part of reformatting of Site Wide Standards; Procedure was approved by Contractor Senior Management.
2.0	Streamlined content and moved exceptions to their own section.
3.0	Changed section purpose to exceptions and numbered individual items. Revised cord and plug exception and added detail.
4.0	Broke out a Requirements section with the following subsections: Training Requirements, Roles and Responsibilities, and General Requirements. Language was moved from the Process section and reformatted from playscript tables to sections and lists.
4.1	Implemented nomenclature change starting here and throughout—Changed Safe Condition Checks to Verification of Isolation Checks (VICs). Removed need to designate COQWs in writing.
4.2.1	Added responsibility to directly communicate results of isolation boundary walkdowns and/or Safe-to-Work Checks to the FWS and Work Crew when serving as the Primary Authorized Worker (PAW).
4.3	<p>Updated and numbered general requirements:</p> <ul style="list-style-type: none"> • Added requirement that a copy of the procedure will be made available upon request. • Moved Controlled Work Area to this section and clarified requirements. • Moved isolation boundary identification to this section and strengthened requirements, including a field walkdown. • Added requirement that if a component is capable of being locked, it shall be locked. Discussed impact of multiple locks. • Added a requirement about modifying lockout devices. • Clarified what information must appear on a Danger tag. • Added requirement to not work on any equipment that would render an installed lockout device ineffective. • Added a requirement specifying that telecom approvals are not permitted for LOTO activities. • Noted on TAF Instructions which blocks require Preparer and Technical Reviewer initials and dates for changes.

Section	Change Details
5.0	Reorganized section and added introduction to show the two methods: Eight-Criteria Checklist and Controlling Organization Lockout/Tagout. Eight-Criteria method now appears first.
5.1.4	<p>Added required pre-installation brief discussion topics:</p> <ul style="list-style-type: none"> • Scope of work to be performed • Consider interlocks or atypical system configurations • Application of Controlled Work Area <p>Clarified and added more detail regarding component positioning and lockout device physical verification pre-installation brief discussion topics.</p>
5.1.7	Added new step requiring verification that the component unique identifier matches the Eight Criteria Checklist.
5.1.10	Added new step requiring visual inspection of lockout device(s).
5.1.12	Added requirement to test before touching every exposed electrical conductor or circuit part within the work area.
5.1.15	Added requirement to ensure nonessential items are removed.
5.2	Block-by-block instructions on how the Lockout/Tagout Authorization Form should be prepared were moved to the online instructions that accompany the <i>Lockout/Tagout Authorization Form (A-6004-460)</i> . Added clarifying language regarding Lockout/Tagout Authorization Form Line Items, which is now a defined term.
5.3	In multiple locations, clarified sequence/repetition of steps.
5.3.1.1	Added note prior to the pre-installation brief bullet noting that the AW briefing may be conducted concurrently. Clarified and added more detail regarding component positioning and lockout device physical verification pre-installation brief discussion topics.
5.3.1.2	Added new bullet requiring visual inspection of lockout device(s).
5.3.1.3	Broke out component positioning into its own step and included direction if concurrent verification is being performed.
5.3.1.4	Added note that VICs may be performed at this time. Clarified process of verifying visually and physically that the lockout device and the DDNO tag are properly installed.
5.3.2.1	Clarified process of verifying visually and physically that the lockout device and the DDNO tag are properly installed.
5.4.1	Updated and strengthened briefing topics.

Section	Change Details
5.4.4 & 5.4.5	Resequenced steps to require AW to install AWL and verify keys are in the lockbox before performing the boundary walkdown.
5.4.6	Clarified requirement of PAW to communicate results of the walkdown directly to the FWS and Work Crew.
5.4.7 & 5.4.12	Added requirement for AW to verify that the PAW's actions are complete prior to moving on to the next step.
5.4.10	Added requirement to test before touching every exposed electrical conductor or circuit part within the work area.
5.4.11	Clarified requirement of PAW to communicate results of the Safe-to-Work Check directly to the FWS and Work Crew.
5.5.2	Added requirement to ensure nonessential items are removed and equipment is in a safe configuration that supports LOTO removal.
5.6-5.8	Rewrote Section 5.6. Added Section 5.7 subsections to separate discussion of DDNO Tag Addition (Section 5.7.1) and DDNO Tag Replacement (Section 5.7.2). Section 5.7.1 includes direction if new VICs are required. Rewrote Section 5.8.
5.9	Since Eight Criteria method was moved to Section 5.1, this section now covers removing an AWL when the AW is not present on the Hanford Site. Section was revised in its entirety. Exception for removal/reinstallation by a different AW using the Eight Criteria was removed (was Section 5.10.1 in Rev. 2B).
5.10	This section now discusses quarterly surveillances.
5.11	This section now discusses the annual assessment. The entire section was restructured and clarified, including adding requirements for assessment personnel. Added NFPA 70E 2018 requirement to conduct in-field observations via contractor assessment programs and include them in the final report.
6.0	Updated forms and tags.
App A	Modified, added, and deleted definitions based on NFPA 70E 2018 and 29 CFR 1910.147. Extensive revisions were made.
App B	The previous Appendix B was removed in its entirety—TAF instructions now appear as Site Form instructions to accompany the TAF. The previous Appendix C is now Appendix B. Added new material and extensively revised existing material.
App C	Appendix D is now Appendix C. Revised to reflect change to Verification of Isolation Checks (VICs) instead of Safe Condition Checks. Added new material and revised existing material.

Section	Change Details
	<p>In Section 1.0, revised introductory language. In Testing of De-energized Electrical Circuits, #1, added NFPA 70E 2018 exception to use noncontact test instruments on electrical systems over 1000 volts. Added detail and subpoints about testing each conductor or circuit part. In Testing of De-energized Electrical Circuits, #2, added discussion about overhead lines.</p> <p>In Section 3.0 #1, added allowance to verify system pressure using a pressure gauge. In Section 3.0 #2, clarified actions to take when vent or drain valves are not available.</p> <p>Added Section 4.0 for VICs for Tank Farm Waste Transfer Systems.</p>

This Change Summary contains only the changes made to this revision. A previous Change Summary detailing all historical changes for this document is available by contacting Integrated & Site Wide Safety Systems (I&SWSS).

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ATTACHMENT 1: HANFORD SITE LOCKOUT/TAGOUT (LOTO)
COMMITTEE CHARTER, REV. 253

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1.0 PURPOSE

This procedure is designed to control hazardous energy and materials during [servicing and maintenance](#) or whenever unexpected operation or energization could cause injury.

2.0 SCOPE

This Lockout/Tagout ([LOTO](#)) procedure shall be used to control hazardous energy and materials to prevent personnel injury whenever workers (contractors, subcontractors, vendors, service providers, etc.) are performing [servicing and maintenance](#) activities on facility [equipment](#) or systems.

This procedure shall also be used when any possibility of personnel injury exists as a result of an unexpected release of energy or hazardous materials, including when damaged [equipment](#) is removed from service pending corrective action.

Some examples of hazardous energy or materials to be controlled to avoid personnel exposure include:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Chemical
- Thermal
- Potential or stored energy
- Radiation Generating Devices
- Hazardous material fluid systems

3.0 EXCEPTIONS

This procedure does *not* apply to the following:

3.1.1 Work on cord and plug connected electric [equipment](#) for which exposure to the hazards of unexpected energization or startup of the [equipment](#) is controlled by unplugging the [equipment](#) from the [energy source](#) and by maintaining the plug under the exclusive control of the employee performing the [servicing and maintenance](#) for the duration of the work.

- “Under the exclusive control” for cord and plug refers to instances in which the plug is physically in the possession of the employee or in arm’s reach and in the line of sight of the employee. This enables the employee to prevent the [equipment](#) from becoming reenergized during [servicing and maintenance](#).
- Cord and plug exclusive control only applies to a single employee.

- 3.1.2 Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that all of the following conditions apply:
- Continuity of service is essential.
 - Shutdown of the system is impractical.
 - Documented procedures are followed, and special equipment is used that will provide proven effective protection for employees.
- 3.1.3 Activities relating to Electrical Utilities (EU) Operations that are addressed per HMIS-PRO-EU-066, *Electrical Utilities Lock and Tag Program*.
- 3.1.4 Greenfield construction type activities, where the system is built toward the [energy source](#), until there is an ability to connect the system to that [energy source](#).
- 3.1.5 [Servicing and maintenance](#) of motor vehicles.
- [Servicing and maintenance](#) of vehicle-mounted auxiliary [equipment](#) (e.g., portable generators and air compressors) is **NOT EXEMPT** and shall be controlled per this procedure.
- 3.1.6 Dunnage or cribbing used during [servicing and maintenance](#).
- 3.1.7 Maintenance activities, including minor tool changes and adjustments, and other minor servicing activities that take place during [normal production operations](#), if they are routine, repetitive, and integral to the use of the [equipment](#) for production, provided that the work is performed using alternative measures that provide effective protection.
- Activities requiring machine or [equipment](#) shutoff and disassembly, such as changing a machine tool or cutting blade; bypassing or removing a guard; placing a part of the worker's body into the [equipment](#) at the point of operation; replacing belts, valves, gauges, linkages, support structure, etc., that take place outside of the normal production process **DO NOT QUALIFY** for this exception.

4.0 REQUIREMENTS

4.1 Training and Administration Requirements

The Volpentest HAMMER Federal Training Center (HAMMER) HMIS-STD-TQ-61036, *Lockout/Tagout Training Program Description*, provides guidance for selecting applicable [LOTO](#) training. HAMMER will ensure employees are trained to this Procedure, including the 29 CFR 1910.147(c)(7)(ii) requirement to train on the six limitations of tags. All employees must be current in [LOTO](#) training for the role they are performing.

Controlling Organization Administrator ([COA](#)) training includes training for both Controlling Organization Qualified Worker ([COQW](#)) and Authorized Worker ([AW](#)) roles. [COQW](#) training includes training for the [AW](#) role.

A [COA](#) shall be designated in writing by the organization responsible for controlling the configuration of the facility/location. Any [COA](#) assigned to determine [isolation boundaries](#) must be a [knowledgeable person](#) on the system(s) for which the [isolation boundaries](#) are being established.

Any person performing and/or signing for Verification of Isolation Checks ([VICs](#)) must be an [AW](#), at a minimum. Any person performing [VICs](#) or [Safe-to-Work Checks](#) shall be qualified for the task.

To perform [AW](#) functions, an individual either shall be escorted or be familiar with the [equipment](#) to be worked on and the applicable [isolation boundary](#).

A Designated Escort shall be qualified as an [AW](#), familiar with the [equipment](#) to be worked on, and familiar with the applicable [isolation boundary](#).

A Field Work Supervisor ([FWS](#)) who oversees work activities requiring [LOTO](#) shall be qualified as an [AW](#), at a minimum.

4.2 Roles and Responsibilities

This section identifies overall responsibilities within the [LOTO](#) process. Responsibilities related to individual [LOTO](#) process steps are provided in Section 5.0.

4.2.1 Authorized Worker (AW)

- Perform [VICs](#) for [Controlling Organization \(CO\)](#).
- Request a Designated Escort when unfamiliar with the [equipment](#) to be worked on or the applicable [isolation boundary](#).
- Escort [AWs](#) who are unfamiliar with the [equipment](#) to be worked on or the applicable [isolation boundary](#).
- Install their AW Lock ([AWL](#)) for their own safety, in accordance with this procedure.

- When performing as the Primary Authorized Worker ([PAW](#)), communicate results of [isolation boundary](#) walkdowns and/or [Safe-to-Work Checks](#) directly to the [FWS](#) and [Work Crew](#).
- Perform or witness [Safe-to-Work Checks](#).
- Remove their [AWL](#) when removal does not cause an unsafe condition.

4.2.2 Designated Escort

Assists the escorted [AW\(s\)](#) as requested in performing the following:

- Proper [isolation boundary](#) walkdown.
- Correct placement of the [AWL](#).
- Proper performance of the [AW's Safe-to-Work Check\(s\)](#) and/or [VICs](#).
- Correct removal of the [AWL](#).

4.2.3 Controlling Organization Administrator (COA)

Responsible for [LOTO](#) functions to include:

- Evaluate hazards that require the use of [LOTO](#).
- Determine which [LOTO](#) method to use: [CO LOTO](#) or Eight-Criteria.
- Determine the appropriate [isolation boundary](#).
- Prepare Lockout/Tagout Authorization (TAFs) and Eight-Criteria Checklists in accordance with the form instructions and this procedure.
- Perform independent [technical review](#) of TAF.
- Ensure [LOTO](#) hardware and tag(s) are made available.
- Perform [LOTO](#) briefings.
- Escort, or assign a Designated Escort, for [AWs](#) who are unfamiliar with the [equipment](#) to be worked on or the applicable [isolation boundary](#).
- Ensure [COQWs](#) assigned to perform [CO LOTO](#) are current in their training.
- Ensure [Affected Worker\(s\)](#) are notified of impending [LOTO](#).
- Authorize the [LOTO](#) to be [installed](#).
- Ensure that [VICs](#) are completed.
- Authorize removal of the [lock\(s\)](#) and Danger Do Not Operate ([DDNO](#)) [tag\(s\)](#).

4.2.4 **Controlling Organization Qualified Worker (COQW)**

- Install, verify, and remove [CO lock\(s\)](#) and [DDNO tags](#).
- Perform or witness [VICs](#).

4.2.5 **Field Work Supervisor (FWS)**

- Escort, or assign a Designated Escort, for [AWs](#) who are unfamiliar with the [equipment](#) to be worked on or the applicable [isolation boundary](#).
- Perform [LOTO](#) briefings.
- Ensure [AWs](#) assigned to perform [LOTO](#) are current in their training.
- Ensure [Affected Workers](#) are notified of impending [LOTO](#).
- Coordinate the installation of [AWLs](#).
- Ensure Controlled Work Area ([CWA](#)) is established and removed.
- Communicate any changes in work scope with [AWs](#) and [COA](#) that may affect the [isolation boundary](#).
- Coordinate the removal of [AWLs](#).

4.2.6 **Hanford Site Lockout/Tagout Committee**

- Review and approve this procedure and any procedure changes.
- Provide clarification, interpretations, or guidance.
- Fulfill all responsibilities listed in *Hanford Site Lockout/Tagout (LOTO) Committee Charter* (Attachment 2).

4.2.7 **Lockout/Tagout Technical Authority**

- Function as the contractor's point-of-contact for this procedure.
- Serve as a voting member on the Hanford Site Lockout/Tagout Committee.

4.2.8 **Management**

- Ensure required training is maintained and documented.
- Designate in writing the [LOTO](#) Technical Authority (TA).
- Designate [COAs](#) in writing who may perform [LOTO](#) for the facility.
- Provide [LOTO](#) hardware and tag(s).
- Ensure *Tagout Index* (A-6000-514) logbook is maintained.
- Review *Lock and Tag Surveillance Checklists* (A-6003-747).

- Ensure an annual review of the hazardous energy control program is conducted.

4.3 General Requirements

- 4.3.1 A copy of this procedure will be made available upon request.
- 4.3.2 After [LOTO](#) is [installed](#), a [CWA](#) shall be established when [equipment](#) barriers such as guards or other safety devices are not in place.
- a. The [CWA](#) shall be large enough to prevent [Affected Worker](#) access to:
 - [Equipment](#) under [LOTO](#).
 - Electrical limited approach boundaries and arc flash boundaries in accordance with National Fire Protection Association (NFPA) 70E.
 - b. Only [AWs](#) with [AWLs](#) installed may enter the [CWA](#) or reach into the [CWA](#) with tools and/or equipment. In cases where the [LOTO component](#) or [lockbox](#) is inside the [CWA](#), the [AW](#) may enter the area to install/remove their [AWL](#).
 - c. The [CWA](#) will be demarcated with safety signs, tags, barricades, and/or Attendant(s) to prevent unauthorized entry. When used, the Attendant(s) shall be an [AW](#) with their [AWL](#) installed.
 - d. The [CWA](#) can be removed when [equipment](#) barriers and/or guards have been installed.
- 4.3.3 [LOTO isolation boundaries](#) shall be identified per the following:
- a. Identify the scope of work and all associated hazards for the [equipment](#) to be worked on.
 - b. Conduct a field walkdown. Exceptions to the walkdown requirement may be made in cases of employee exposure to greater hazards (e.g., high radiation conditions, permit-required confined spaces, etc.) or when a previous TAF or Eight-Criteria Checklist has successfully used the [isolation boundary](#) and the design/configuration is unchanged. Justification for such exceptions shall be documented in TAF Block #15 or the “Comments” section of the Eight-Criteria Checklist.
 - c. Use up-to-date single-line drawings when available. When up-to-date drawings are not available, use an equally effective means to locate all sources of energy. Equally effective means may include the following: engineering sketches, construction drawings, investigative work packages, databases, worker involvement, Subject Matter Expert (SME) input, etc.
 - d. Ensure the [unique identifier](#) matches the identification on the drawing. However, if the label does not match the drawing or a drawing does not

- exist, follow contractor-level procedures to install a new label (temporary or permanent) and/or initiate a drawing change.
- e. Refer to Appendix B for hazardous energy isolation controls.
- 4.3.4 If a [component](#) is capable of being locked, it shall be locked and tagged.
- a. When multiple [locks](#) could negatively impact the isolating [component](#) or [lockout device](#), use a [CO LOTO](#) or a different [lockout device](#).
- b. When unable to use a [lock, equivalent protection](#) and a [DDNO tag](#) are required.
- 4.3.5 [Lockout devices](#) shall meet all of the following requirements:
- a. Use of [lockout devices](#) shall be in accordance with manufacturer's instructions.
- b. All [lockout devices](#) shall be standardized.
- c. All [lockout devices](#) shall be durable.
- They shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- d. All [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.
- e. [AWLs](#) shall:
- Be green.
 - Be uniquely keyed.
 - Be used with a [Danger tag](#).
 - Have a single key controlled by the [AW](#).
- f. [CO locks](#) shall:
- Be red.
 - Be uniquely keyed.
 - Be used with [DDNO tags](#).
 - Have a single key controlled by the [CO](#).
- g. Green and red [locks](#) shall not be used for any other applications.
- h. Modification or fabrication of [lockout devices](#) shall be in accordance with manufacturer's instructions or approved engineering processes.

- 4.3.6 Lockboxes shall meet the following requirements:
- a. Be suitable for containing keys and equivalent protection indicators.
 - b. Have a clear cover.
 - c. Be identified with a number, letter, or combination of both.
 - d. Be securable by affixing locks.
- 4.3.7 [DDNO tags](#) and [Danger tags](#) shall meet all of the following requirements:
- a. All tagout devices shall be standardized.
 - b. All tagout devices shall be durable:
 - They shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
 - They shall be constructed and printed so that exposure to corrosive environments, weather conditions, or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
 - c. All tagout devices shall be manufactured with a grommet.
 - d. All tagout devices shall be substantial enough to prevent inadvertent or accidental removal.
 - e. All tagout devices shall be attached in a substantial manner. A tagout device attachment means shall be capable of withstanding at least 224.4 N (50 lb) of force exerted at a right angle to the disconnecting means surface. The tag attachment means shall be nonreusable, attachable by hand, self-locking, nonreleasable, and equal to an all environmental tolerant nylon cable tie.
 - f. [DDNO tags](#) shall contain the following information:
 - LOTO Number
 - Tag Number
 - Logbook Location
 - Lock Number
 - Component Tagged
 - Component Position
 - Authorized By and Date
 - Installed By and Date
 - Verified By and Date

- g. [Danger tags](#) shall contain the following information:
- [AW's](#) Name
 - [AW's](#) Manager's Name
 - Manager's Telephone Number
- 4.3.8 Temporary lifting and reinstalling of [DDNO tags](#) is not allowed.
- 4.3.9 [DDNO tags](#) shall only be used one time and must be destroyed once removed.
- 4.3.10 Do not authorize another person to ignore or violate this procedure.
- 4.3.11 Do not attempt to operate any [component](#) upon which a [LOTO](#) is [installed](#).
- 4.3.12 Do not work on any equipment that would render an installed [lockout device](#) ineffective.
- 4.3.13 A [component](#) with an attached [LOTO](#) shall not be maintained/serviced, modified, or removed from the installed location.
- 4.3.14 Telecom approvals are not permitted for [LOTO](#) activities.
- 4.3.15 Pen and ink corrections to TAFs are not allowed prior to signing Block #11. If corrections are necessary, the TAF must be re-written.
- 4.3.16 After a TAF has been technically reviewed, all subsequent corrections made to a TAF or tag shall be documented by a single line cross-out and initialing and dating the correction. See the TAF Instructions for specific guidance regarding which blocks require Preparer and Technical Reviewer initials and dates for changes.
- 4.3.17 Replace an [AWL](#) with a [CO LOTO](#) when work is suspended for an extended period of time (e.g., work scope change, parts on order) to maintain a [safe configuration](#).
- 4.3.18 If any discrepancies are found during the [LOTO](#) process, stop work and notify the [COA](#).
- 4.3.19 When performance of the work requires facility [overlock/overtag](#) of the EU Hold-Off Tag, apply a [CO LOTO](#).
- 4.3.20 When interfacing with work groups who do not use this procedure, the [CO](#) must coordinate the control of the [isolation boundary](#) with this procedure.

5.0 PROCESS

This section establishes the process steps for performing [LOTO](#) activities. The user may perform only those sections needed. Steps *within* a section shall be performed in order unless otherwise noted. Bullets are used for steps or sub-steps not requiring sequential performance.

Determine which of the following methods is to be used to control hazardous energy:

- Section 5.1, *Eight-Criteria Method*
- Sections 5.2-5.8, *CO LOTO Method*

5.1 Eight-Criteria Method

[LOTO](#) may be performed using an [AW's AWL](#) and [Danger tag](#) alone when all eight criteria listed below are met. If all eight criteria are not met, then use the [CO LOTO](#) method.

- (1) The [equipment](#) has no potential for stored or residual energy or re-accumulation of stored energy after shutdown, which could endanger workers.
- (2) The [equipment](#) has a single [energy source](#) that can be readily identified and isolated.
- (3) The isolation and locking out of that [energy source](#) will completely de-energize and deactivate the [equipment](#).
- (4) The [equipment](#) is isolated from that [energy source](#) and locked out during [servicing and maintenance](#).
- (5) A single [lockout device](#) will achieve a locked out condition.
- (6) The [lockout device](#) is under the exclusive control of the [AW](#) performing the [servicing and maintenance](#).
- (7) The [servicing and maintenance](#) does not create hazards for other workers.
- (8) There has been no incident or deficiency involving the use of this method for the machine or [equipment](#) pending correction or resolution by the responsible [CO](#) or contractor employer.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
		NOTE: <i>The isolation boundary for an Eight Criteria is limited to a single isolation point.</i>
COA	5.1.1	Identify the single energy source to be isolated.
	5.1.2	Complete the <i>Eight-Criteria Checklist</i> (A-6003-801).
		NOTE: <i>Steps 5.1.3 and 5.1.4 may be performed concurrently.</i>
AW	5.1.3	Verify and concur that the single isolation point is readily identifiable per the Eight-Criteria Checklist: <ul style="list-style-type: none"> • Agree to use the Eight-Criteria method or use a CO LOTO.
		NOTE: <i>Individuals may be briefed separately.</i>
COA or FWS	5.1.4	Perform the following: <ul style="list-style-type: none"> • Provide AW(s) with previous TAF, previous Eight-Criteria Checklist, or circuit verification, upon request. • Ensure a LOTO pre-installation brief is conducted with AWs, including: <ul style="list-style-type: none"> ○ Scope of work to be performed. ○ Personnel hazards and controls. ○ Component, including: <ul style="list-style-type: none"> ▪ Component positioning ▪ Unique operating or positioning techniques ▪ Amplifying information ○ Lockout device, including: <ul style="list-style-type: none"> ▪ Ensuring the device is designed to hold the number of locks required ▪ Identifying techniques to physically verify proper installation without repositioning the component or damaging the lockout device or component ○ Discuss method(s) for Safe-to-Work Checks: <ul style="list-style-type: none"> ▪ Interlocks or atypical system configurations ▪ Consequences of attempting to start the equipment ○ Application of CWA. • Escort, or assign a Designated Escort, for AWs who are unfamiliar with the equipment to be worked on or the applicable isolation boundary.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or FWS	5.1.5	Ensure Affected Workers are notified of intent to de-energize equipment .
	NOTE:	<i>During the initial installation of the AWL(s), the AW(s) on the job may observe, at their discretion, the component positioning for the isolation boundary. Once the work has begun, the AW(s) not involved with the initial LOTO installation rely on their system knowledge, field walkdown, and Safe-to-Work Check(s).</i>
AW	5.1.6	Ensure that equipment is shut down or otherwise de-energized by relieving, disconnecting, or otherwise rendering safe any stored or residual energy.
	5.1.7	Verify the component unique identifier matches the Eight Criteria Checklist.
	5.1.8	Ensure the component is in the required position.
	5.1.9	Ensure the information on the AW's Danger tag is complete, legible, and current.
	5.1.10	Visually inspect lockout device(s) for wear or damage.
	NOTE:	<i>Step 5.1.12 may be performed prior to Step 5.1.11 when the installation of the lock will prevent performance of the Safe-to-Work Check.</i>
	5.1.11	Securely attach the lockout device and AWL . Each AW shall install only their own AWL : <ul style="list-style-type: none"> • If no other LOTO is installed, then: <ul style="list-style-type: none"> ○ Perform visual verification that the lockout device is adequately installed. ○ Perform physical verification to ensure the lockout device prevents operation of the component. ○ Perform physical verification that your AWL is properly installed. • If another LOTO is already installed, then: <ul style="list-style-type: none"> ○ Perform visual verification to ensure that the lockout device is adequately installed. ○ Perform physical verification that your AWL is properly installed without changing the position of the component.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
AW	5.1.12	<p>Perform or witness a Safe-to-Work Check:</p> <ul style="list-style-type: none"> • Prior to the start of work. • Once per shift. • If the configuration has changed. <p>NOTE: <i>Interlocks or atypical system configurations may impact an effective Safe-to-Work Check.</i></p> <p>Safe-to-Work Checks include one or more of the following:</p> <ul style="list-style-type: none"> • Voltage checks shall be conducted where electrical shock hazards exist. <ul style="list-style-type: none"> ○ Test before touching every exposed electrical conductor or circuit part within the work area. • Voltage checks may be requested by an AW when the hazardous energy is mechanical, but the motive force is electrical. • Attempt to start (ensure personnel are clear of the potential hazard). • Use of any other appropriate methods to ensure hazardous energy control.
	5.1.13	Perform work.
	5.1.14	<p>Determine that it is safe to remove the AWL when one or more of the following exists:</p> <ul style="list-style-type: none"> • Equipment is in a safe configuration that supports AWL removal. • Other AWs continue to work and maintain control over the isolating device. • The CO has taken control of the isolation point.
	5.1.15	If work is complete, ensure nonessential items have been removed and employees are safely positioned or removed from the work area.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
	NOTE:	When an AW's AWL is removed, the work location is unattended for that AW .
AW	5.1.16	Remove AWL . Each AW removes only their own AWL , except as allowed by Section 5.9. <ul style="list-style-type: none"> An AW who is required to return to the work location after leaving it unattended shall return to Step 5.1.6 but may request an updated LOTO pre-installation brief.
FWS	5.1.17	Ensure Affected Workers are notified when the LOTO is removed.

5.2 CO LOTO Method

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA (Preparer)	5.2.1	Identify the LOTO isolation boundary for each line item .
	5.2.2	Prepare the <i>Lockout/Tagout Authorization Form</i> (A-6004-460) and DDNO tag(s) , per the form instructions. The DDNO tag(s) shall match the TAF.
	5.2.3	Sign and date TAF Block #10 signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	5.2.4	Verify the adequacy and accuracy of the isolation boundary on the TAF: <ul style="list-style-type: none"> • The preparation and technical review shall be independent activities performed by separate individuals. • Verify that the TAF and DDNO tag(s) are properly prepared.
	5.2.5	Sign and date TAF Block #11 indicating completion of the technical review .

5.3 Applying the CO LOTO Method

Only an up-to-date original or an up-to-date copy of the TAF is to be used when installing the [LOTO](#), verifying the [LOTO](#), and performing the [VICs](#). If an up-to-date copy of the TAF is used when field conditions warrant, the original shall be signed promptly after leaving the area.

During the initial installation of the [LOTO](#), the [AWs](#) on the job may observe, at their discretion, the [component](#) positioning and [VICs](#) for the [isolation boundary](#). Once the [CO LOTO](#) has been [installed](#) and work has begun, the [AWs](#) not involved with the initial [LOTO](#) installation rely on their system knowledge, briefing, field walkdown, and [Safe-to-Work Check\(s\)](#).

If discrepancies are found during field activities, stop work and notify the [COA](#).

[Components](#) may be locked out/tagged out in any order, unless sequencing is specified in TAF Block #14.

Verification of the [component's](#) position/condition shall be performed independently of installation unless [concurrent verification](#) has been justified and authorized in TAF Block #14. Steps 5.3.1, 5.3.2, and 5.3.3 may be performed for a single [component](#) or for multiple [components](#) and repeated until installation of all [locks](#) and/or tags per [line item](#) is complete.

5.3.1 Installation of CO LOTO

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.3.1.1	Perform the following: <ul style="list-style-type: none"> • If not already completed: <ul style="list-style-type: none"> ○ Enter information in Blocks #1 and #2 on the <i>Tagout Index</i> (A-6000-514) ○ Enter the number from the <i>Tagout Index</i> in TAF Block #1. • Verify all information on TAF is complete, current, and accurate. • Ensure any TAF copies to be used during installation are up to date and match the original. • Review DDNO tag(s) for completeness. • Ensure equipment/system conditions support the application of the LOTO. • Authorize installation of the lock(s), if applicable, and DDNO tag(s) by signing and dating TAF Block #24 and associated DDNO tag(s).

Actionee	Step	Action
		<p>NOTE: <i>Individuals may be briefed separately prior to performance of their tasks.</i></p> <p>NOTE: <i>The AW briefing of Step 5.4.1 may be conducted concurrently with the pre-installation brief as long as COQWs and AWs understand their distinct roles and responsibilities.</i></p>
COA	5.3.1.1 (cont'd)	<ul style="list-style-type: none"> • Ensure a LOTO pre-installation briefing is conducted with personnel performing installation, verification, and VICs including: <ul style="list-style-type: none"> ○ Any special instructions ○ Relevant hazards and controls ○ Component, including: <ul style="list-style-type: none"> ▪ Component positioning ▪ Unique operating or positioning techniques ▪ Amplifying information ○ Lockout device(s), including techniques to physically verify proper installation or alternative method per TAF Block #14 without: <ul style="list-style-type: none"> ▪ Repositioning the component ▪ Damaging the lockout device or component ○ Performance of the VICs <ul style="list-style-type: none"> ▪ Consequences of attempting to start the equipment • Ensure Affected Workers are notified of impending LOTO.
COQW (Installer)	5.3.1.2	<p>Prepare to install the lock(s) and DDNO tag(s):</p> <ul style="list-style-type: none"> • Verify TAF Block #24 and DDNO tag Authorized By line are signed. • Ensure any special instructions from TAF Block #14 are met or will be met. • Verify the component unique identifier matches the TAF and the DDNO tag. • Visually inspect lockout device(s) for wear or damage.

Actionee	Step	Action
COQW (Installer) and/or COQW (Verifier)	5.3.1.3	<p>Ensure the component identified in TAF Block #20 is in the specified position/condition per TAF Block #23.</p> <ul style="list-style-type: none"> • If performing concurrent verification authorized per TAF Block #14, the verifier must be present for component positioning only.
<p>NOTE: <i>VICs may be performed at this time, per Section 5.3.3, prior to installing the lock, as long as the component position/condition is maintained until the lock and DDNO tag are installed.</i></p>		
COQW (Installer)	5.3.1.4	<p>Install the lock (if applicable) and DDNO tag:</p> <ul style="list-style-type: none"> • If not using a lock, secure the DDNO tag on the component or as close as possible without interfering with other indications or controlling devices. • If no other LOTO is installed, install the lock and DDNO tag on the component identified in TAF Block #20 and control the key. <ul style="list-style-type: none"> ○ Perform visual verification to ensure that the lockout device is adequately installed. ○ Perform physical verification or alternative method per TAF Block #14 to ensure the lockout device prevents operation of the component. ○ Perform physical verification that the lock is properly installed.
<p>NOTE: <i>A new lock and DDNO tag should not be installed if it interferes or conflicts with previously installed LOTO.</i></p> <ul style="list-style-type: none"> • If another LOTO is already installed, install the lock and DDNO tag on the component identified in TAF Block #20 and control the key: <ul style="list-style-type: none"> ○ Perform visual verification to ensure that the lockout device is adequately installed. ○ Perform physical verification that the new lock is properly installed without changing the position of the component. 		
<p>5.3.1.5 Complete the following:</p> <ul style="list-style-type: none"> • If a lock number is already assigned, then ensure the lock number matches the number recorded in TAF Block #22 and DDNO tag, as applicable. • If a lock number is not already assigned, then record the lock number in TAF Block #22 and on the DDNO tag. 		

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
	5.3.1.6	Complete the following: <ul style="list-style-type: none"> • Sign and date the Installed By line on the DDNO tag. • Sign and date TAF Block #25.
	5.3.1.7	Ensure key(s) and equivalent indicators are controlled by the CO .
	5.3.2	Independent Verification of CO LOTO
		If position cannot be determined, or isolation/de-energization cannot otherwise be verified, work shall be stopped, and the COA shall be notified.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COQW (Verifier)	5.3.2.1	<p>Verify lock (if applicable) and DDNO tag as follows:</p> <ul style="list-style-type: none"> • TAF Block #24 and DDNO tag Authorized By line are signed. • TAF Block #25 and DDNO tag Installed By line are signed. • Any special instructions for verification from TAF Block #14 are met or will be met. • Installed on component per TAF Block #20. • Verify the component unique identifier matches the TAF and the DDNO tag. • Position/condition of component matches with TAF Block #23, if not already performed using concurrent verification. • DDNO tag is secured. • Lock is secured on component, as applicable. • If no other LOTO is installed, then: <ul style="list-style-type: none"> ○ Perform visual verification to ensure that the lockout device is adequately installed. ○ Perform physical verification or alternative method per TAF Block #14 to ensure the lockout device prevents operation of the component. ○ Perform physical verification that the lock is properly installed. • If another LOTO is already installed, then: <ul style="list-style-type: none"> ○ Perform visual verification to ensure that the lockout device is adequately installed. ○ Perform physical verification that the new lock is

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
		properly installed without changing the position of the component .
		<ul style="list-style-type: none"> • Lock number matches the number recorded in TAF Block #22 and DDNO tag, as applicable.
	5.3.2.2	Complete the following: <ul style="list-style-type: none"> • Sign and date the Verified By line on the DDNO tag. • Sign and date TAF Block #26.
	5.3.3 Perform Verification of Isolation Checks (VICs)	
		Refer to Appendix C for guidelines for performing VICs .

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COQW and/or AW	5.3.3.1	Ensure the VIC is performed or witnessed per TAF Block #32.
	5.3.3.2	Sign and date TAF Block #27.
	5.3.4 Review TAF	

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.3.4.1	Ensure that key(s) and/or equivalent protection indicator(s) are controlled in the lockbox for the duration of the LOTO . Ensure Block #5 is completed.
	5.3.4.2	Ensure that the TAF is signed up to and including Block #27 for each isolation boundary per the applicable line item .
	5.3.4.3	If copies of the TAF were used during installation, ensure the copies are properly discarded.

5.3.5 Tagout Index

Step 5.3.5.1 is not required to be completed prior to the release of work but should be completed prior to the end of the shift.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.3.5.1	Document Date Installed in Block #3 of <i>Tagout Index</i> (A-6000-514).

5.4 Perform the Required Field Work Under CO LOTO

During the initial installation of the [LOTO](#), the [AWs](#) on the job may observe, at their discretion, the [component](#) positioning and [VICs](#) for the [isolation boundary](#). Once the [CO LOTO](#) has been [installed](#) and work has begun, the [AWs](#) not involved with the initial [LOTO](#) installation rely on their system knowledge, briefing, field walkdown, and [Safe-to-Work Check\(s\)](#).

If any discrepancies are found during field activities of the [LOTO](#) process, stop work and notify the [COA](#).

If the [AW\(s\)](#) would be exposed to greater hazards (e.g., high radiation conditions, permit-required confined spaces, etc.) while performing an [isolation boundary](#) walkdown, a job-specific instruction shall be written that includes justification for omitting the walkdown and alternative method(s) to be used. This instruction shall be agreed upon by the [LOTO TA](#), [COA](#) and [AW\(s\)](#).

Steps 5.4.1, 5.4.2, 5.4.3, 5.4.4, 5.4.5, or 5.4.6 may be repeated as necessary to support utilizing a [PAW](#) prior to the [Work Crew](#) designating that individual as the [PAW](#), provided concurrence from the [Work Crew](#) is subsequently verified during the briefing in Step 5.4.1. Shaded steps may be skipped where a [PAW](#) is not used.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or FWS	5.4.1	Perform the following: <ul style="list-style-type: none"> • Verify that the TAF line item(s) is (are) installed. • Ensure a copy of this procedure is available at the briefing. • Ensure the AWs are briefed on the following: <ul style="list-style-type: none"> ○ Scope of work for the applicable line item(s). ○ Energy isolation boundary. ○ Any special methods used for energy control. ○ Personnel hazards. ○ Any alternative methods used for physical verification of lockout device(s). ○ Discuss method(s) for Safe-to-Work Check(s): <ul style="list-style-type: none"> ▪ Interlocks or atypical system configurations. ▪ Consequences of attempting to start the equipment ○ Application of CWA. ○ Use of a PAW if applicable. • Provide a copy of the installed TAF to the AWs.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or FWS	5.4.1 (cont'd)	<ul style="list-style-type: none"> Escort, or assign a Designated Escort, for AWs who are unfamiliar with the equipment to be worked on or the applicable isolation boundary.
COA, Management, or FWS	5.4.2	<p>Authorize the use of a PAW to perform the isolation boundary walkdown when:</p> <ul style="list-style-type: none"> Additional safety hazards exist due to nature of work; or The size of the Work Crew warrants the use of the PAW.
Work Crew	5.4.3	<p>If agreed to by the workers, Work Crew designates the PAW. Each AW may also perform their own isolation boundary walkdown, at their discretion.</p>
AW and PAW, if used	5.4.4	<p>Install AWL on lockbox as follows:</p> <ul style="list-style-type: none"> Ensure the information on the AW's Danger tag is complete, legible, and current. Verify the lockbox matches the information in TAF Block #5. Install AWL on the lockbox. Each AW shall install <i>only</i> their own AWL. Verify that all the key(s) and/or equivalent protection indicator(s) are in the lockbox.
AW and/or PAW	5.4.5	<p>Perform an isolation boundary walkdown as follows:</p> <ul style="list-style-type: none"> Verify DDNO tag(s) and lock(s) are hanging on the correct component(s). Verify visually that component(s) are in the required position(s)/condition(s). <ul style="list-style-type: none"> When component position cannot be verified (by system response or visual indication), communicate with the COA for resolution.
PAW	5.4.6	<p>If a PAW was used for an isolation boundary walkdown, communicate the results of the isolation boundary walkdown directly to the FWS and Work Crew.</p>
FWS and AW	5.4.7	<p>If a PAW was used, confirm the PAW has completed the isolation boundary walkdown prior to proceeding to the Safe-to-Work Check(s).</p>

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or Management	5.4.8	When additional safety hazards exist due to the nature of the work, authorize the use of a PAW to perform or witness the Safe-to-Work Check(s) and provide written justification in the work record.
Work Crew	5.4.9	If agreed to by the workers, Work Crew designates the PAW(s) . Each AW may also perform or witness the Safe-to-Work Check(s) , at their discretion.
AW and/or PAW	5.4.10	Perform or witness the Safe-to-Work Check(s) : <ul style="list-style-type: none"> • Prior to the start of work. • Once per shift. • If the configuration has changed. • The Safe-to-Work Check(s) shall be performed independently of the VICs. <p>NOTE: <i>Interlocks or atypical system configurations may impact an effective Safe-to-Work Check.</i></p> <p>Safe-to-Work Checks include one or more of the following:</p> <ul style="list-style-type: none"> • Voltage checks shall be conducted where electrical shock hazards exist. <ul style="list-style-type: none"> ○ Test before touching every exposed electrical conductor or circuit part within the work area. • Voltage checks may be requested by an AW when the hazardous energy is mechanical, but the motive force is electrical. • Attempt to start (ensure personnel are clear of the potential hazard). • Use of any other appropriate methods to assure energy control.
PAW	5.4.11	If a PAW was used to perform or witness the Safe-to-Work Check(s) , communicate the results of the Safe-to-Work Check(s) directly to the FWS and Work Crew .
FWS and AW	5.4.12	If a PAW was used, confirm the PAW has performed or witnessed the Safe-to-Work Check(s) prior to performing work.
AW	5.4.13	Perform work.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
AW	5.4.14	Remove the AWL from the lockbox when the AW is ready and is no longer performing servicing and maintenance . Each AW shall remove only their own AWL , except as allowed by Section 5.9.
	NOTE:	<i>When an AW's AWL is removed from the lockbox, the work location is unattended for that AW.</i>
	5.4.15	When an AW is required to return to the work location after leaving it unattended , re-perform all of Section 5.4.

5.5 Clearing a CO LOTO

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or FWS	5.5.1	Sign and date in TAF Block #12 for the applicable line item , indicating that the isolation boundary identified in TAF Block #7 is no longer required.
COA	5.5.2	Prepare to authorize DDNO tag removal for the applicable line item : <ul style="list-style-type: none"> • Ensure the DDNO tag is not required for another line item. • Ensure equipment is in a safe configuration that supports LOTO removal. • Ensure nonessential items have been removed. • Ensure all AWLs are removed.
	5.5.3	Approve LOTO removal for the applicable line item as follows: <ul style="list-style-type: none"> • Sign and date removal approval in TAF Block #28 for each tag to be removed. • Identify restoration position/condition in TAF Block #29 for each tag to be removed if not already filled in. • Conduct a pre-removal briefing with COQW to include: <ul style="list-style-type: none"> ○ Any special instructions ○ Restoration position ○ Associated hazards and controls ○ DDNO tag disposition
COQW (Remover)	5.5.4	If authorized to restore equipment to service, ensure that personnel are safely positioned or removed from the work area.
	5.5.5	Perform the following for each DDNO tag and lock , if used, to be removed: <ol style="list-style-type: none"> a. Remove in accordance with TAF, following any applicable special instructions provided in TAF Block #14. b. Ensure the component identified in TAF Block #20 is in the specified position/condition per TAF Block #29. c. Sign and date TAF Block #30 for each DDNO tag removed.
	5.5.6	Return TAF and DDNO tag(s) to the COA , unless otherwise directed (e.g., contamination areas).

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.5.7	<p>Complete LOTO removal as follows:</p> <ul style="list-style-type: none">• Verify correct DDNO tag(s) has been removed.• Notify Affected Workers.• Ensure that DDNO tag(s) are destroyed.• Ensure TAF completeness and accuracy.• When LOTO is complete:<ul style="list-style-type: none">○ Enter Date Closed in Block #4 on <i>Tagout Index</i> (A-6000-514).○ Destroy any unused DDNO tag(s).• Maintain the completed TAF (or copy) within the LOTO Logbook for a period of one year.

5.6 Partial Clearance of DDNO Tags

Individual [DDNO tags](#) and [lock\(s\)](#), if used, may be cleared prior to the clearance of the entire [LOTO](#). When a TAF contains multiple [line items](#), partial clearances are allowed if [DDNO tags](#) **ARE NOT** required by other [line items](#). A walkdown to identify the [isolation boundary](#) is not required for this section.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA (Preparer)	5.6.1	Identify the LOTO isolation boundary .
	5.6.2	Prepare the TAF for partial clearance of DDNO tag(s) by creating a new line item . <ul style="list-style-type: none"> Document reason for partial clearance of DDNO tag(s) in TAF Block #15.
	5.6.3	Sign and date TAF Block #10 for the new line item signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	5.6.4	Verify the adequacy and accuracy of the isolation boundary for the new line item on the TAF.
	5.6.5	Sign and date TAF Block #11, indicating completion of the technical review .
COA	5.6.6	Ensure AWLs are removed from the lockbox and ensure remaining keys are controlled.
	5.6.7	Perform Section 5.5 to clear DDNO tag(s) .

5.7 Addition/Replacement of DDNO Tags

5.7.1 Addition of DDNO Tags

This section covers the process for adding (a) new [line item\(s\)](#) that require(s) additional [DDNO tag\(s\)](#) and lock(s), if used.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA (Preparer)	5.7.1.1	Identify the LOTO isolation boundary .
	5.7.1.2	Prepare the TAF for the addition of DDNO tag(s) by creating a new line item per the applicable form instructions. <ul style="list-style-type: none"> Document reason for addition of DDNO tag(s) in TAF Block #15. If the new line item requires additional VIC(s), identify the new VIC(s) and designate it as “NEW” in TAF Block #32. Prepare the DDNO tag(s) to be used. The DDNO tag(s) shall match the TAF.
	5.7.1.3	Sign and date TAF Block #10 for the new line item signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	5.7.1.4	Verify the adequacy and accuracy of the isolation boundary for the new line item on the TAF. <ul style="list-style-type: none"> Verify that the DDNO tag(s) match the information on the TAF.
	5.7.1.5	Sign and date TAF Block #11 indicating completion of the technical review .
COA	5.7.1.6	Ensure AWLs are removed from the lockbox .
	5.7.1.7	Perform Section 5.3 to add DDNO tag(s) . <ul style="list-style-type: none"> Perform or witness any <i>NEW</i> VIC(s) per TAF Block #32. Sign and date any <i>NEW</i> VIC(s) on TAF Block #32.
	5.7.1.8	If a previous line item on the TAF is no longer required, sign and date TAF Block #12, indicating that the previous isolation boundary in TAF Block #7 is no longer required.

5.7.2 Replacement of DDNO Tags

This section covers the process for replacing missing, damaged, or illegible [DDNO tags](#).

This section is applicable when the [CO lock](#) remains in place. During application of a replacement [DDNO tag](#), the [VIC](#) from the original installation is *not* required to be re-performed since control of the [isolation boundary](#) is maintained.

If a [CO lock](#) is not [installed](#), use Section 5.7.1 for addition of tag(s), followed by Section 5.6 for partial clearance.

A walkdown to identify the [isolation boundary](#) is not required for this section.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA (Preparer)	5.7.2.1	Prepare the TAF for the replacement DDNO tag(s) by creating a new line item . <ul style="list-style-type: none"> Document reason for replacement of DDNO tag(s) in TAF Block #15. Record “N/A” in TAF Block #27. Prepare the DDNO tag(s) to be used. The DDNO tag(s) shall match the TAF.
	5.7.2.2	Sign and date TAF Block #10 for the new line item , signifying that the isolation boundary and paperwork are adequate and accurate for the task.
	COA (Technical Reviewer)	5.7.2.3
5.7.2.4		Sign and date TAF Block #11, indicating completion of the technical review .
COA	5.7.2.5	Authorize installation of the replacement DDNO tag(s) by signing and dating TAF Block #24 and associated DDNO tag(s) .
	NOTE:	<i>AWLs are not required to be removed during DDNO tag replacement.</i>
	5.7.2.6	Ensure AWs working under the CO LOTO are notified of the impending DDNO tag(s) replacement.
	5.7.2.7	Ensure work is suspended.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.7.2.8	Ensure a LOTO replacement brief is conducted with COQWs performing installation and verification, including: <ul style="list-style-type: none"> • Relevant hazards and controls • Lockout device(s) • Replacement of tag(s)
	NOTE:	<i>Steps 5.7.2.9 through 5.7.2.15 may be performed concurrently with Steps 5.7.2.16 through 5.7.2.19 and repeated.</i>
COQW (Installer)	5.7.2.9	Verify that the DDNO tag information is correct and complete.
	5.7.2.10	Affix the replacement DDNO tag to the lock on the component identified in TAF Block #20 using a substantial attachment.
	5.7.2.11	Sign and date the replacement DDNO tag .
	5.7.2.12	Sign and date TAF Block #25.
COQW (Verifier)	5.7.2.13	Independently verify as follows: <ul style="list-style-type: none"> • DDNO tag is securely affixed to the lock on the component identified in TAF Block #20 • DDNO tag information is correct and complete • TAF Block #25 and DDNO tag have been signed by the Installer
	5.7.2.14	Sign and date replacement DDNO tag .
	5.7.2.15	Sign and date TAF Block #26.
COA or FWS	5.7.2.16	Sign and date TAF Block #12 for the line item where a DDNO tag is being replaced.
COA	5.7.2.17	Approve removal of a DDNO tag being replaced as follows: <ul style="list-style-type: none"> • Sign and date removal approval in TAF Block #28. • Record “N/A” in TAF Block #29.
	NOTE:	<i>A tag affixed to a CO lock through a grommet may be cut away, leaving the grommet affixed to the CO lock.</i>
COQW (Remover)	5.7.2.18	Remove DDNO tag if present.
	5.7.2.19	Sign TAF Block #30 for the tag removed or record “N/A” if missing.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COQW (Remover)	5.7.2.20	Return TAF and DDNO tag(s) to the COA , unless otherwise directed (e.g., missing, contamination areas).
COA	5.7.2.21	Complete LOTO removal as follows: <ul style="list-style-type: none">• Verify correct DDNO tag(s) has been removed.• Ensure that DDNO tag(s) are destroyed.
COA or FWS	5.7.2.22	Notify workers of tag replacement to allow work to resume under the new line item .

5.8 Adding Work Documents or Line Items to an Installed Isolation Boundary

Only work documents or [line items](#) that use part or all of the [installed isolation boundary](#) may use this section. Use Section 5.7.1 for work documents or [line items](#) that require additional [components](#).

A walkdown to identify the [isolation boundary](#) is not required for this section.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA (Preparer)	5.8.1	Identify the LOTO isolation boundary .
	5.8.2	Prepare the TAF for the new work document by creating a new line item . <ul style="list-style-type: none"> • If the new line item requires additional VIC(s), identify the new VIC(s) and designate it as “NEW” in TAF Block #32.
	5.8.3	Sign and date TAF Block #10 for the new line item , signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	5.8.4	Verify the adequacy and accuracy of the isolation boundary for the new line item on the TAF.
	5.8.5	Sign and date TAF Block #11, indicating completion of the technical review .
COA	5.8.6	If performing <i>NEW</i> VICs for installed DDNO tag(s) , perform the following: <ol style="list-style-type: none"> a. Ensure a LOTO brief is conducted with personnel performing <i>NEW</i> VICs, including <ul style="list-style-type: none"> • Any special instructions • Relevant hazards and controls • Performance of <i>NEW</i> VICs b. Ensure personnel are clear of the potential hazard. c. Perform or witness <i>NEW</i> VICs per TAF Block #32. d. Sign and date the <i>NEW</i> VICs on TAF Block #32.
		COA or FWS
		COQW and/or AW

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA or FWS	5.8.7	<p>Perform the following:</p> <ul style="list-style-type: none">• Ensure that personnel performing work under the CO LOTO are briefed on the following:<ul style="list-style-type: none">○ Scope of work for the new line item(s).○ Any special methods used for energy control.○ Personnel hazards.○ Discuss method(s) for any additional Safe-to-Work Check(s):<ul style="list-style-type: none">▪ Interlocks or atypical system configurations▪ Consequences of attempting to start the equipment○ Application of CWA.• Provide a copy of the updated TAF to the AWs.

5.9 Exception for Removal of AWL when AW is Not Present on Hanford Site

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
FWS	5.9.1	Verify that system configuration supports AWL removal.
Manager	5.9.2	Verify that the AW who applied the AWL is <i>not</i> on the Hanford Site. <ul style="list-style-type: none"> • Employees in training at the HAMMER facility are considered to be off the Hanford Site. • Employees who are restricted from access to the AWL (e.g., medical restriction) are considered to be off the Hanford Site.
	5.9.3	Make all reasonable efforts to directly contact and inform the AW that their AWL will be removed.
	5.9.4	Notify FWS of results of attempt to notify AW of AWL removal.
FWS	5.9.5	Request COA authorization to remove AWL .
FWS or COA	5.9.6	Record results of attempt to notify and removal authorization in the applicable work record(s) for that AW .
FWS and COA	5.9.7	Concurrently verify in the field that the AWL is the correct lock to be removed.
	5.9.8	Perform or witness AWL removal.
Manager or Supervisor	5.9.9	Ensure the AW is notified of the AWL removal promptly upon their return to the Hanford Site.

5.10 CO LOTO Quarterly Surveillance

The Controlling Organization shall have a process to track quarterly surveillance activities. This section also fulfills the periodic audit requirements of DOE O 422.1.

[LOTOs](#) that are in areas that pose an unacceptable safety risk, such as radiological, hazardous chemical zones, or high overhead areas may be excluded from quarterly surveillance activities.

If the surveillance cannot be completed for all active [DDNO tags](#)/TAFs, document the justification in Block #15.

<i>Actionee</i>	<i>Step</i>	<i>Action</i>
COA	5.10.1	Ensure quarterly surveillances are performed and documented using a <i>Lock and Tag Surveillance Checklist</i> (A-6003-747).

5.11 Hazardous Energy Control Annual Assessment

The purposes of the annual assessment are to ensure this Procedure is being followed and to identify and correct any deficiencies in this Procedure or training. Contractors shall ensure annual assessments are performed to fulfill the requirements of DOE O 422.1, NFPA 70E, and 29 CFR 1910.147, documented in their contractor assurance system, and provided to the Hanford Site Lockout/Tagout Committee.

Personnel performing field assessments shall be, at a minimum, [AW](#)-qualified and independent of the process they are assessing. The person leading the assessment must meet contractor assessment qualifications.

The Committee shall provide annual Lines of Inquiry (LOIs) to contractors. Using those LOIs, contractors shall assess each [CO](#) for compliance with this Procedure by reviewing or conducting, at a minimum, the following:

- TAFs from previous 12 months
- Available Eight-Criteria Checklists
- Interviews and/or group meetings with a representative sample of [AWs](#) and Affected Workers to ensure employees understand their responsibilities
- In-progress [LOTO](#) field observations (either during the assessment or within the previous 12 months) to include at least:
 - One TAF
 - One Eight-Criteria Checklist

6.0 FORMS/TAGS

The following forms/tags (or equivalent) are used by this procedure. [DDNO tags](#) shall be constructed to include an adhesive laminate to be affixed after tag completion.

Danger Tag, (AW), G705805

Danger Do Not Operate Tag, G1511246

Eight-Criteria Checklist, A-6003-801

Lock and Tag Surveillance Checklist, A-6003-747

Lockout/Tagout Authorization Form, A-6004-460

Tagout Index, A-6000-514

7.0 RECORDKEEPING

Performance of this process generates the following records shown in Table 1. Records shall be maintained in accordance with contractor records management processes.

TABLE 1: RECORDS CAPTURE TABLE

Name of Document	Submittal Responsibility	Retention Responsibility
<i>Lockout/Tagout Authorization Form, A-6004-460</i>	Initiator	Work package or Project records
<i>Eight-Criteria Checklist, A-6003-801</i>	Initiator	Work package or Project records
<i>Tagout Index, A-6000-524</i>	Initiator	Project records
<i>Lock and Tag Surveillance Checklist, A-6003-747</i>	Initiator	Project records
Hazardous Energy Control annual periodic review inspection records, including deficiencies	Facility Management	Project records

8.0 REFERENCES

10 CFR 851, *Worker Safety and Health Program*

10 CFR 1910.146, *Permit-Required Confined Spaces*

29 CFR 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*

29 CFR 1910.333, *Selection and Use of Work Practices*

CRD O 422.1, *Conduct of Operations*

DOE-0359, *Hanford Site Electrical Safety Program*

DOE-0360, *Hanford Site Confined Space Procedure*

HMIS-PRO-066, *Electrical Utilities Lock and Tag Program*

HMIS-STD-TQ-61036, *Lockout/Tagout Training Program Description*

NFPA 70E, *Standard for Electrical Safety in the Workplace*

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APPENDIX A: DEFINITIONS & ACRONYMS

DEFINITIONS

Term	Definition
Affected Worker	A person whose job requires them to operate or use a machine or piece of equipment on which servicing and maintenance is being performed, or whose job requires them to work in an area where servicing and maintenance is being performed under lockout/tagout.
Authorized Worker (AW)	A person who installs and removes their Authorized Worker Lock and Danger tag on a lockbox or a component for equipment or systems to perform servicing and maintenance on that equipment or system.
Authorized Worker Lock (AWL)	A uniquely keyed green lock and Danger tag combination used by Authorized Workers.
Blocking Device	A device used to obstruct, prevent or impede the motion or rotation of equipment by introducing an obstacle to prevent an unexpected release of hazardous energy.
Component (Energy Isolation Device)	A mechanical device that physically prevents the transmission or release of hazardous energy or material.
Concurrent Verification	A process where the installer and verifier verify the required component position/condition at the same time.
Controlled Work Area (CWA)	An area in which hazards are controlled by a lockout/tagout and is demarcated to prevent Affected Worker access.
Controlling Organization (CO)	The organization responsible for establishing and maintaining isolation boundaries associated with the work to be performed.
Controlling Organization Administrator (COA)	Individual designated by Controlling Organization management and trained to perform lockout/tagout preparation, technical review, or authorization.
Controlling Organization Qualified Worker (COQW)	Individual who performs Controlling Organization lockout/tagout installation or removal, independent or concurrent verification, or Verification of Isolation Checks.
Danger Do Not Operate (DDNO) Tag	The tag used by Controlling Organizations for hazardous energy or hazardous material lockouts/tagouts.
Danger Tag	The tag used by Authorized Workers to perform lockout/tagout.

Term	Definition
Energized	Connected to an energy source or containing residual or stored energy.
Energy Source	Any source of hazardous energy or materials. Sources include electrical, mechanical, hydraulic, pneumatic, chemical (toxic, hazardous, dangerous, radiological, carcinogenic), radiation generating devices, hazardous material fluid systems, and thermal energies, as well as various forms of potential or stored energy, such as that stored in springs, compressed gases, or suspended objects (gravitational).
Equipment	Machinery and systems upon which servicing and maintenance is performed.
Equivalent Protection	Additional elements necessary to provide the comparable safety available from the use of a lockout device. Examples include removing an isolating circuit element or removing a valve handle to reduce the likelihood of inadvertent energization/operation.
Equivalent Protection Indicator	Tags, valve handles and fuses, etc., identified and placed in a lockbox to indicate that equivalent protection to a lock is being used.
Field Work Supervisor (FWS)	An individual who directs work teams to ensure the safe and compliant performance of work. A Field Work Supervisor is equivalent to various supervisor terms (e.g., Supervisor, Person in Charge, First Line Manager, Foreman, Superintendent).
Gagging Device	A device designed to block off or obstruct operation of a valve (also called “jacking device”).
Independent Verification	The act of checking, by a separate Controlling Organization Qualified Worker, that a component position conforms to established criteria. This second check is separated by time and distance.
Installed	<p>An Eight-Criteria lockout/tagout is considered installed after the first Authorized Worker Lock is correctly applied to the component.</p> <p>A Controlling Organization lockout/tagout is considered installed after the Tagout Authorization Form has been signed by both the installer and verifier, all Verification of Isolation Checks have been performed, and keys are properly controlled.</p>

Term	Definition
Isolation Boundary	The component(s) that is(are) configured to provide a safe working condition where servicing and maintenance are to be performed.
Knowledgeable Person	One who possesses the expertise to determine isolation boundaries for lockout/tagout on specific equipment or systems to accomplish effective control of hazardous energy or hazardous material.
Line Item	Blocks 6-12 on the Lockout/Tagout Authorization Form.
Lock	A uniquely keyed device (not a combination lock) that ensures a component is held in the required position for the protection of personnel.
Lockout/Tagout (LOTO)	<p>The process designed to control all hazardous energy and materials during servicing and maintenance or whenever unexpected operation or energization could cause injury.</p> <p>(1) <i>Lockout</i>. To install a lockout device on sources of hazardous energy such that operation of the disconnecting means is prohibited, and forcible removal of the lock is required to operate the disconnecting means.</p> <p>(2) <i>Tagout</i>. To install a tagout device on sources of hazardous energy, such that operation of the disconnecting means is prohibited.</p>
Lockout Device	A device that uses a positive means, such as a lock, to hold an energy-isolating component in a safe position and prevent the energizing of systems and equipment. Included are blank flanges and bolted slip blinds.
LOTO Logbook	A binder(s) that contains, at a minimum, the Tagout Index, the active Tagout Authorization Forms, and Tagout Authorization Forms that have been completed within a period of one year.
Normal Production Operations	The utilization of equipment to perform its intended production function.
Overlock/Overtag	Installation of a lockout/tagout on top of another lockout/tagout.
Primary Authorized Worker (PAW)	A member or members of the Work Crew, designated and agreed upon by the Work Crew, with the responsibility to perform a walkdown of the isolation boundary and/or perform or witness Safe-to-Work Checks for a group of Authorized Workers.

Term	Definition
Safe-to-Work Check	The inspection or test performed or witnessed by the Authorized Worker to verify that no hazardous energy exists prior to servicing and maintenance.
Safe Configuration	Configuration of equipment that prevents personnel from being exposed to hazardous energy if unexpected energization or release of stored energy were to occur.
Servicing and Maintenance	Workplace activities such as constructing or decommissioning and deactivating facilities, as well as installing, setting up, adjusting, inspecting, modifying, maintaining, and servicing machines or equipment. These activities include lubrication, cleaning or unjamming of equipment, and making adjustments where the employee may be exposed to the <i>unexpected</i> energization or startup of the equipment or release of hazardous energy.
Technical Review	An independent review of the Tagout Authorization Form, Danger Do Not Operate tags and the isolation boundary to verify that they are technically adequate and administratively accurate.
Unattended	The work location is unattended for an Authorized Worker when their Authorized Worker Lock is removed from a component, lockout device, or lockbox.
Unique Identifier	<p>Distinctive component label if one is provided. Otherwise, one or more of the following:</p> <ul style="list-style-type: none"> • Component name • Clear, specific description • Facility-specific identification number • Other information that will uniquely identify the component <p>Any supplemental information that is not part of the unique identifier may be added in parentheses for clarification. This information is entered on the DDNO tag exactly as written on the TAF.</p>
Verification of Isolation Check (VIC)	The test and/or inspection of each component of the lockout/tagout boundary to verify hazardous energy isolation. (This term was previously known as the Safe-Condition Check.)
Work Crew	Authorized Workers who are performing work under a specific Lockout/Tagout activity.

ACRONYMS

AHJ	Authority Having Jurisdiction
AW	Authorized Worker
AWL	Authorized Worker Lock
CO	Controlling Organization
COA	Controlling Organization Administrator
COQW	Controlling Organization Qualified Worker
CWA	Controlled Work Area
DA	Design Authority
DDNO	Danger Do Not Operate
EU	Electrical Utilities
FWS	Field Work Supervisor
HGET	Hanford General Employee Training
LOIs	Lines of Inquiry
LOTO	Lockout/Tagout
NFPA	National Fire Protection Association
PAW	Primary Authorized Worker
SME	Subject Matter Expert
TA	Technical Authority
TAF	Lockout/Tagout Authorization Form
VIC	Verification of Isolation Check

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APPENDIX B: HAZARDOUS ENERGY ISOLATION CONTROLS

The following information establishes the minimum requirements for hazardous energy or material isolation and control via LOTO.

Specific provisions of this Appendix that cannot be met shall be included in the work planning and approval process to address alternative methods of hazard control and verification. Alternative methods shall be approved by the Lockout/Tagout Technical Authority and Controlling Organization Administrator (COA).

1.0 ISOLATING ELECTRICAL ENERGY

Live parts operating at 50 volts or more to which an employee might be exposed shall be put into an electrically safe work condition, using the process defined in this procedure, before an employee approaches nearer than the Limited Approach Boundary or Arc Flash Boundary (as defined by NFPA 70E), unless it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design. Until the area is verified free of all electrical hazards using the appropriate processes, electrical equipment shall be considered energized and appropriate controls, including personal protective equipment (PPE), shall be incorporated to guard, isolate, or insulate the worker from exposure to electrical hazards, in accordance with DOE-0359, *Hanford Site Electrical Safety Program*.

1. Electrical Distribution. After reviewing available circuit drawings and minimizing the loads, open and install LOTO on electrical circuit breakers, switches, disconnects, or other devices that provide isolation to the area to be worked from all sources of electrical energy. Isolate and install LOTO on control power as appropriate for the work to be performed.
2. Electrical Control Circuits/Interlocks. Do **not** use electrical control circuits/interlocks for LOTO isolation, since they do not provide adequate protection to interrupt main power.
3. Electrical Breakers. Use isolating techniques (such as racking out breakers, removing power fuses) as appropriate, to ensure positive isolation from line electrical energy sources and to prevent the unexpected energization of the circuit.
4. Electrical Tagout Requirements. A DDNO tag used without a lock shall use equivalent protection.
5. Working with Multi-Wire Branch Circuits and Other Neutral Hazards. Establish initial isolation boundaries by controlling all known sources of power using a combination of field walkdowns, document/drawing reviews, voltage checks, and system knowledge.

If a potential neutral hazard is discovered in the field upon commencement of work, and the neutral circuit continuity cannot be maintained to complete the planned task, either by circuit design or lack of confidence in the circuit integrity, work shall be discontinued and the FWS and COA contacted.

If the shared neutral circuit utilizes a double-pole breaker or two single poles tied together by manufacturer's listed tie, the eight-criteria method may be used.

If further work planning, investigative review, and/or isolation boundary modification cannot guarantee complete isolation (e.g., the potential for system wiring configuration inconsistencies may still exist), work requiring interruption of neutral circuit continuity shall be conducted using the energized work processes outlined in DOE-0359, *Hanford Site Electrical Safety Program* until the work area is confirmed to be free of electrical hazards.

6. Systems with UPS Secondary Power Source. Although most UPSs do not feed back through their primary power source, the possibility does exist that backfeeding could occur. Evaluate each situation with system SME.
7. Temporary Protective Grounding. Where the possibility of induced voltages or stored electrical energy exists, the phase conductors or circuit parts shall be grounded before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts that cannot be locked out, temporary protective grounding shall be installed on the equipment. Temporary protective grounding equipment shall:
 - Be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to a shock hazard (i.e., hazardous differences in electrical potential). The location, sizing, and application of temporary protective grounding equipment shall be identified as part of work planning (via special instructions on the TAF or work document instructions).
 - Be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.
 - Have an impedance low enough to cause immediate operation of protective devices in case of unintentional energizing of the electric conductors or circuit parts.

Questions concerning temporary protective grounding should be directed to contractor electrical Authority Having Jurisdiction (AHJ), electrical system Design Authority (DA), and/or Lockout/Tagout Technical Authority (TA).

2.0 ISOLATING ROTATING OR MOVING EQUIPMENT

1. Install LOTO on energy sources when there is a potential for personnel injury from rotating equipment with panels, guards, or safety devices removed.
2. Do not use power control switches as LOTO isolation components since they do not provide adequate protection to interrupt main power.
3. If isolation from an energy source does not eliminate the potential for hazardous movement of equipment, block or otherwise secure the equipment to prevent such movement.
4. When blocking or securing devices are used, control by installing LOTO per this procedure.

3.0 ISOLATING ENGINE-DRIVEN EQUIPMENT (EXCEPT MOTOR VEHICLES)

1. Disconnect batteries or other sources of power and install LOTO.

4.0 ISOLATING FLUID SYSTEMS

4.1 Pressure At or Below 500 psig and/or Temperature At or Below 200°F

EXCEPTION: *This section does not apply when **all** of the following are true:*

- *The hazardous energy source(s) that creates the pressure/temperature in a fluid system is (are) locked out*
- *The system has been depressurized and/or cooled down so that no potential for personnel injury exists*
- *Hazardous energy cannot re-accumulate*

NOTE: *Steam condensate systems may contain backfeeds, multiple energy sources, trap failures, etc., that can create significant hazards to personnel. Evaluate each situation carefully.*

Establish LOTO for systems that normally operate between 150-500 psig and/or 125-200°F. If it is determined by the COA and/or AW that a potential for personnel injury (e.g., falls, engulfment, or hydraulic injection) exists in a system that operates below 150 psig and/or 125°F, that system shall have LOTO installed.

Use the following method:

1. Use at least one shutoff valve to provide isolation from each energy source.
2. Systems, portions of systems, and equipment that operate at temperatures or pressures above ambient should be vented and, if necessary for the performance of work, drained or cooled.
3. Whenever possible, an atmospheric drain and/or vent between the equipment to be worked on and sources of pressure to the equipment should be locked in the open position to ensure the equipment remains depressurized and to accommodate thermal expansion or contraction.
4. If a normal depressurization path cannot be provided within the isolation boundary, develop a job-specific work instruction using other methods to ensure that the system or equipment is adequately isolated, depressurized, and drained (such as loosening the fasteners on flanged connections or valve bonnets, removing instrument tubing, etc.).

4.2 High Temperature/High Pressure/Steam/Cryogenic Fluids or Liquid Metals

EXCEPTION: *This section does not apply when **all** of the following are true:*

- *The hazardous energy source(s) that creates the pressure/temperature in a fluid system is (are) locked out*
- *The system has been depressurized and/or cooled down so that no potential for personnel injury exists*
- *Hazardous energy cannot re-accumulate*

NOTE 1: *For gas cylinders, single-valve protection is permitted if two-valve protection is not possible.*

NOTE 2: *Steam condensate systems may contain backfeeds, multiple energy sources, trap failures, etc., that can create significant hazards to personnel. Evaluate each situation carefully.*

When isolating steam systems or equipment whose normal operating temperature exceeds 200°F, normal operating pressure exceeds 500 psig, or systems that contain liquid metals or cryogenic fluids, observe the following methods in addition to those in Section 4.1 of this Appendix.

1. Use at least two shutoff valves in a series (“two-valve protection”) to provide isolation from the fluid. Apply the requirements for two-valve protection to all paths from which the fluid may cross the isolation boundary.
2. Whenever possible, a LOTO shall be installed on an open atmospheric drain or vent to depressurize the equipment.
3. Single-valve isolation may be used per Section 4.1 of this Appendix, if LOTO is installed on the system, so that pressures greater than 500 psig and/or temperatures greater than 200°F cannot be reached.

4.3 Hazardous Material Fluid Systems

1. Systems Containing Hazardous Materials. Systems containing hazardous materials (e.g., acids, bases, radiological) shall be evaluated to determine if control with LOTO is necessary to prevent personnel injury. Verifying depressurization by breaking flanged connections, loosening valve bonnets, removing instrument tubing, or other similar actions should be avoided unless no other means exists.
2. Isolating Tank Farm Waste Transfer Systems.

NOTE: *Safety significant valving is not necessary for two-valve protection.*

Systems containing tank waste shall be isolated by one or more of the following methods:

- a. Installing LOTO on physically connected waste transfer pumps.
- b. Installing LOTO on two valves in series for physically connected waste transfer lines.

5.0 ISOLATING FLOWABLE MATERIAL IN CONFINED SPACES

1. Flowable material is a liquid, gas, or finely divided (flowable) solid substance that can cause a hazardous atmosphere or engulfment.
2. Utilization of single valve isolation with LOTO alone is not considered adequate to eliminate a flowable material hazard to downgrade a Permit-Required Confined Space (PRCS).
3. Acceptable methods of flowable material hazard elimination to downgrade a PRCS include one or more of the following with LOTO:
 - Blanking or blinding.
 - Use of double block and bleed. The drain or vent must be between the two valves and directed outside the confined space.
 - Intentional misalignment of the system.
 - Isolating the flowable material hazard source and draining the system and/or lines.
4. If not downgrading a PRCS, follow applicable Appendix B guidance for flowable material hazardous energy control.

6.0 VALVE ISOLATION PRACTICES

1. Valves that Fail Open/Shut. LOTO the valve operating supply for pneumatic, hydraulic, electrical, or motor-operated valves. If a valve does not fail in the desired position, it must be gagged to maintain the desired position. If the valve is gagged, the device needs to be tagged in place.
2. Regulators/Relief Valves/Check Valves. These components may only be used for LOTO isolation if they are mechanically restrained in the required position with a gagging device designed for that purpose.

7.0 STORED ENERGY CONSIDERATIONS

1. Sources of stored energy shall be blocked or otherwise relieved:
 - Springs shall be released, or physical restraints shall be applied.
 - Pneumatic and hydraulic reservoirs shall be depressurized.
 - Capacitors shall be discharged.
 - Rotating equipment hazards (e.g., windmilling fans) shall be controlled.
2. When blocking devices are used to mitigate hazards to personnel during servicing and maintenance, control by installing LOTO per this procedure.

8.0 DAMPERS

1. Pneumatic, hydraulic, electric or motor operated dampers: LOTO the damper operating supply for pneumatic, hydraulic, electrical, or motor-operated damper. If the damper does not fail in the desired position, it must be blocked to maintain the desired position. If the damper is blocked, the blocking device needs to be tagged in place.
2. Backdraft Dampers: Backdraft dampers may only be used for LOTO isolation if the damper is mechanically restrained in the required position.

APPENDIX C: PERFORMING VERIFICATION OF ISOLATION CHECKS (VICs)

This section provides methods to perform Verification of Isolation Checks (VICs). The COA determines appropriate VICs based on the hazards identified, system or equipment characteristics, and the risk to the worker. **Each VIC shall specify test and/or inspection methods and locations.**

1.0 VICs for Electrical Energy

DOE-0359, *Hanford Site Electrical Safety Program*, specifies test instrument requirements, required PPE, and personnel qualifications.

Testing of De-energized Electrical Circuits

1. During the LOTO process, and before starting work, the circuit elements and electrical parts of equipment to which employees may be exposed shall be tested to verify that the circuit elements and equipment parts are de-energized, as follows:
 - Whenever possible, visually verify that all blades of the disconnecting devices are fully open or that draw-out type circuit breakers are withdrawn to the fully disconnected position.
 - Test each phase conductor or circuit part to verify they are de-energized.
 - On electrical systems over 1000 volts, noncontact test instruments shall be permitted to be used to test each phase conductor.
 - Test each phase conductor or circuit part both phase-to-phase and phase-to-ground.
 - In some cases, performing before and after voltage checks during the actuation of an isolating device provides an additional level of protection.
 - Before and after each test, determine that the test instrument is operating satisfactorily.
 - Where there is no accessible exposed point to take voltage measurements, other options may be appropriate if addressed in TAF Block #14, Special Instructions, and/or TAF Block #32, VICs.
2. For non-electrical work with the potential to contact overhead power lines, confirm with the utility owner/operator that the power line has been de-energized and visibly grounded at the work site.

2.0 VICs for Rotating and Moving Equipment

NOTE: *Either Step 1 or Step 2 or both are performed depending on the hazard identified.*

1. After ensuring there are no interlocks or permissives that may prevent operation of the equipment, attempt to start.
2. Electrical disconnecting devices are visually checked to verify the devices are electrically open or tested in accordance with Section 1.0 above.

3.0 VICs for Pressurized Systems

1. Vents and/or drain valves shall be monitored after the system is drained or vented to verify that system pressure is released. System pressure may be verified using a pressure gauge.
2. Depressurization by breaking flanged connections, loosening valve bonnets, removing instrument tubing, or other similar actions may be used when vent or drain valves are not available.
3. In cases where verification that hazardous systems are depressurized and drained is not feasible as a VIC, other options may be appropriate if addressed in TAF Block #14, Special Instructions, and/or TAF Block #32, VICs.

4.0 VICs for Tank Farm Waste Transfer Systems

VICs for tank farm waste transfer systems consist of one or more of the following:

1. Verify two-valve protection on physically connected waste transfer lines.
2. Verify electric, hydraulic, or pneumatic waste transfer pumps are isolated.
 - For electrically driven pumps, perform a voltage check.
 - For hydraulic or pneumatic pumps, verify that the lines are disconnected.

**ATTACHMENT 1: HANFORD SITE LOCKOUT/TAGOUT (LOTO) COMMITTEE
CHARTER, REV. 2**

Hanford Site Lockout/Tagout (LOTO) Committee Charter, Rev. 2

The Hanford Site Lockout/Tagout (LOTO) Committee is established to serve as an advisory group providing consensus direction for the consistent administration and implementation of the Hanford Site LOTO Procedure, herein called the Procedure. The participating contractors and organizations are responsible for appointing representatives to the Committee.

The U.S. Department of Energy (DOE) Richland Operations Office (RL), DOE Office of River Protection (ORP), and affected Contractors acknowledge that a joint committee provides the best approach for implementing a consistent, effective, and compliant interpretation of requirements for the Procedure. The parties agree to cooperate in a teambuilding manner to ensure that the full intent of the Procedure is met and will be responsibly carried out by their respective organizations.

1.0 Mission

The mission of the Hanford Site LOTO Committee is to ensure consistent and standard application of the Procedure to promote and maintain a safe work environment. The Committee will achieve this consistent approach through sharing best practices, lessons learned, and addressing cross-cutting issues in a coordinated fashion for continuous improvement.

2.0 Committee Structure/Membership/Qualification

The Committee shall be composed of two primary representatives from each of the following prime contractors to the DOE at Hanford:

- Hanford Mission Essential Services Contract (HMESC)
- Central Plateau Cleanup Contract (CPCC)
- Tank Operations Contract (TOC)
- 222-S Laboratory Contract

One representative shall be the contractor's Technical Representative for the Procedure as determined by their contractor; the second representative shall be a Hanford Atomic Metal Trades Council (HAMTC) representative (as appointed by the HAMTC President or delegate).

In addition, one representative each from the following organizations shall be appointed to serve on the Committee:

- Central Washington Building and Construction Trades Council (CWB&CTC), as approved by the Union President or delegate

These representatives compose the consensus decision-making membership. An alternate member shall be identified to serve during any absence of a primary representative. The alternate shall have the same authority as the primary representative.

Representatives from Volpentest HAMMER Federal Training Center (HAMMER) shall attend meetings as non-voting advisory members to address matters pertaining to their respective areas of responsibility. An alternate advisory member shall be identified to serve during any absence of a primary representative.

Representatives of RL and ORP shall be invited to participate at each meeting in an advisory role.

Meetings shall be open to others to observe and to give their organizations' impact, perspectives, and technical advice for consideration of the Committee members; however, participation in consensus decisions resides solely with the Committee members described herein. The Committee has the authority to develop subcommittees and invite ad hoc participants as needed.

A Committee member's length of duty may be indeterminate, but rotation of representative assignments is encouraged by all parties.

Candidates for the Chair and Co-Chair will be nominated by the Committee membership with an opportunity to accept or decline. Each position will be selected by consensus of the Committee membership every two years. With Committee consensus, the chair and co-chair may continue in their respective positions.

The HMESC shall provide a recording secretary for the Committee. The recording secretary provides administrative support. A facilitator shall be provided by the HMESC as requested by the Committee.

3.0 Functions of the LOTO Committee

The functions of the Committee shall be:

- Select a Chair and Co-Chair.
- Assist the HMESC with the implementation and maintenance of the written Procedure.
- Communicate and submit Procedure changes to RL and ORP through the HMESC.
- Maintain the Committee charter and review annually.
- Review training material to ensure that it is consistent and appropriately covers the application of the Procedure.
- Provide guidance/direction for field inquiries regarding Procedure compliance issues.
- Evaluate trends in LOTO performance and recommend actions for improvement.
- Review Hanford Site and DOE Complex Occurrence Reporting and Processing System and Lessons Learned for impacts to the Procedure.
- Monitor action items identified by the committee and track to resolution.
- Develop and maintain established methodologies for communicating to the workforce.
- Assist their respective contractor in the establishment of Lower-Tier Contractor Specific LOTO committees.

- Evaluate and recommend resolution for issues/disputes pertaining to the Procedure.
 - Issues shall not include any actions regarding applicable Collective Bargaining Agreements.
- Provide LOTO Procedure status to the Senior Management Team (SMT) and DOE management, as necessary or when requested
- Distribute LOTO meeting minutes to respective organizations including Lower Tier Contractor-Specific LOTO committees

4.0 Roles and Responsibilities

4.1 Chair

- Schedule and facilitate meetings in an orderly fashion
- Ensure meeting agendas are prepared
- Ensure meeting discussions are captured in meeting minutes
- Function as the point of contact and spokesperson for the Committee
- Ensure action item list is maintained and members complete their assignments in a timely manner
- Coordinate assignments of subcommittee(s)
- Call for consensus on discussed agenda items
- Interface with other Site-Wide Committees, as necessary

4.2 Co-Chair

- Act as the Chair when the Chair is absent

4.3 Perform roles and responsibilities as delegated by the Chair/Committee Member

- Provide the chairperson with the identity of an alternate Committee member who is designated as the organizational representative.
- Attend and participate in meetings when scheduled or notify their alternate when unable to attend.
 - Alternates are responsible to attend and participate in meetings when the primary cannot attend.
 - If the primary and alternate are both unable to attend, the Chair shall be notified.
- Maintain a safety and requirements focus when addressing issues; avoid facility, craft, job function, or contractor biases when participating in discussions and consensus decision-making.
- Foster communication between the committee and respective contractor(s) relative to issue identification, interpretations, and consensus resolution in a way that maintains site-wide consistency.
- Maintain current knowledge of the requirements of the Procedure.

- Participate in issue discussions representing respective organization.
- Report on the highlights of Lower-Tier Contractor Specific Committee meeting minutes, including technical decisions.
- Recommend individuals to serve on subcommittees when expert advice is required for the resolution of change items
- Follow Hanford Site-Wide Standards Committee Ground Rules (HMIS-PLN-SP-41080, *Hanford Site-Wide Standards Management Plan*).

4.4 Recording Secretary

- Prepares Committee meeting agenda including:
 - Minutes from last meeting
 - Status of open items that were previously approved by the Committee
 - Action items from previous meetings
- Records meeting minutes and incorporates comments.
- Distributes meeting minutes to Committee members (and the LOTO user community as appropriate).
- Ensure record copies of site governing documents are updated as appropriate..

5.0 Meetings

- The Committee will meet at regularly scheduled meetings. Scheduled meetings will be held at least quarterly.
- The Committee may hold special meetings to address urgent or emerging issues.
- Meeting minutes and action items will be recorded, retained in appropriate site systems, and distributed to the membership, alternates, and DOE.

6.0 Meeting Agenda

The chairperson shall ensure an agenda is prepared for each meeting, using input from the membership, and forward a copy to all members, alternates, and DOE in advance of the meeting time and date.

7.0 Quorum

The Committee shall be considered to have a quorum when all Committee members, or their designated alternates, are present. Any proxy authorization must be in writing and submitted to the Committee in advance of the meeting. Failure to reach consensus will be cause for an issue to elevate into a secondary phase of discussion and comment.

8.0 Secondary Phase of Discussion and Issue Resolution

Matters not agreed upon by the Committee through the initial consensus decision-making process shall be elevated to the secondary phase of discussion. This phase may include up to two additional meetings. Further discussion/investigation beyond the two additional meetings may be conducted if there is unanimous agreement by the Committee.

If consensus cannot be reached by the Committee, the issue will be elevated to the SMT and/or DOE for resolution. The SMT shall provide a status of their resolution to the Committee.

9.0 Lower Tier Contractor-Specific Committees

Since the core function of a Site-Wide Standard is “worker protection,” it is imperative to have a structure that fosters and encourages input and feedback from the working level. Affected contractors will convene a working level committee (also referred to as a lower tier committee) to discuss issues, concerns, or events that occur in the area of LOTO within their organizations. These working level committees shall include equal representation of bargaining unit (as appointed by the bargaining unit president or delegate) and non-bargaining unit employees and ensure good communication up through each group’s representative(s) on the Hanford Site LOTO Committee.

9.1 Minimum Lower Tier Contractor-Specific Committee Roles and Responsibilities

- Actively seek worker input in regard to the Procedure.
- Meet at least quarterly.
- Assemble the committee to have a balanced membership with regard to bargaining unit and exempt employees.
- Raise worker level issues/concerns to the Hanford Site LOTO Committee, as deemed necessary.
- Assist in Periodic LOTO Reviews.
- Assist line management with consistent implementation of the Procedure.
- Review performance, trends, incidents, and assessments; provide Procedure improvement suggestions to the responsible contractor organization.

Hanford Site Lockout/Tagout Procedure

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John Embury
President & Project Manager
Central Plant Clean-up Company

September 29, 2022
Date


Ray Galt
Laboratory Manager
Hanford Laboratory Management and Integration

10/10/22
Date


Bob Wilkins
President & General Manager
Hanford Medical Integration Solutions

October 2022
Date


Laurie Miller
President & Program Manager
HPAC Occupational Medical Services

10/20/2022
Date


Wesley H. Bryan
President & Project Manager
Washington River Protection Solutions LLC

10-3-2022
Date


Jeffrey D. Miller
President
Hanford Atomic Metal Trades Council

12-15-2022
Date


Nicholas J. Thompson, President
Central Washington Building & Construction Trades Council

11/7/22
Date