DOE-0336
Revision 2B

Approved for Use by WRPS
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Hanford Site Lockout/Tagout Procedure

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

U.S. DEPARTMENT OF ENERGY

CHANGE SUMMARY

Rev#	Section Changed	Change Details
2	Section 1.0, Section 2.0	Removes the ability for users to use DOE-0336 for equipment configuration.
2	Section 5.1, Section 5.4.1, Section 5.9.4	New responsibility for the field work supervisor (FWS) to escort or assign an escort to personnel who are unfamiliar with the facility and/or systems.
2	Section 5.1, Section 5.2, Section 5.8	Mistakes made before Block #10 is signed require the Tagout Authorization Form (TAF) to be re-written. Clarifies that corrections made after the Preparer has signed Block #10 must be approved by both the Preparer and Technical Reviewer.
2	Section 5.3.1.b, 4th Bullet	Allows the Safe Condition Check to be conducted concurrently with the Danger Do Not Operate (DDNO) tag installation regardless of whether or not the lock interferes.
2	Section 5.4, Preamble; Section 5.9, Preamble; Appendix A; Appendix E	Invokes the use of the Controlled Work Area. The Controlled Work Area is a new requirement to DOE-0336.
2	Section 5.4, Preamble	Clarifies that Steps 5.4.1, 5.4.2 and 5.4.3 can be repeated as necessary. This allows a Primary Authorized Worker (PAW) to be utilized for a boundary walk down prior to obtaining concurrence from the Work Crew.
2	Section 5.4	Sections 5.10.2 and 5.10.3, regarding use of the PAW, were incorporated into Section 5.4 to eliminate the need to use several sections of the procedure. The PAW related sections are shaded.
2	Section 5.3.4, Section 5.4.3	Requires the use of a lockbox for all Controlling Organization lockout/tagouts (LOTOs).
2	Section 5.4.6 & 10, Section 5.9.9 & 15	“Unattended” was removed from Steps 5.4.6 and 5.9.9. The references to “Unattended” are now found in Steps 5.4.10 and 5.9.15 which requires the re-performance of Section 5.4 and/or 5.9 accordingly.

Rev#	Section Changed	Change Details
2	Various	The following topics have been relocated within the procedure and have new section numbers - New Section 5.6: Partial Clearance of DDNO Tags. Was Section 5.7. New Section 5.10.2: Removal of Energy Control Device(s) When Authorized Worker (AW) is Not Present on Hanford Site. Was Section 5.6. New Section 5.7: Replacement/Addition of DDNO Tags. Was Section 5.8. New Section 5.8: Adding Work Packages to a Previously Installed Lockout/Tagout. Was Section 5.10.4.
2	Section 5.6, Preamble; Section 5.7, Preamble; Section 5.8.10	Clarifies that work must be suspended and that Authorized Worker Locks (AWLs) must be removed from a lockbox when new tags are added or removed to or from a LOTO.
2	Section 5.9.1	Provides clarification for meeting the requirements of "Readily Identified."
2	Section 5.11, Preamble; Section 5.3.5	New requirement to document surveillances that cannot be completed in Block #15. New Step 5.3.5 was added to establish periodicity. This was removed from Step 5.11.1.
2	Section 5.2.4, Section 5.7.3, Section 5.8.4, Appendix B	Incorporates Committee approved interpretation allowing the use of amplifying information associated with required component position/condition.
2	Appendix C, 5.2	Clarifies that a vent or drain must be provided to accommodate thermal expansion or contraction when isolating high temperature/pressure systems. Two-Valve Protection with a vent between the valves is required for work involving confined spaces.
2	Appendix C, 5.3	Allows single valve isolation on high pressure/temperature systems provided that the LOTO is installed so that high pressures/temperatures cannot be generated by the system being serviced.
2	Appendix C, 6.2	New Guidance added for Isolating Tank Farms Waste Transfer Systems.
2	Appendix D, 1.2, Bullet 7	Clarifies that observing the voltage go away is an acceptable Safe Condition Check.

Rev#	Section Changed	Change Details
2A	5.7	Deleted duplicative language (steps 2-4) in Rev. 2
2B	5.10.2	Corrected "AW Facility" to say "HAMMER Facility."
2B	Appendix C, 6.2	Added "one or more of" to the sentence prior to the bullets to clarify that "Systems containing tank waste shall be isolated by one or more of the following methods."

Mark A. Wright, Project Technical Services
Vice President, CH2M HILL Plateau
Remediation Company

21 OCT 2014
Date

Michael B. Wilson, ESH&T Vice President
Mission Support Alliance, LLC

29 SEP 14
Date

Kliss McNeel, ESH&QA Director
Washington Closure Hanford, LLC

9/29/14
Date

Robert E. Wilkinson, ESH&Q Manager
Washington River Protection Solutions, LLC

9/29/14
Date

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ATTACHMENT 1: HANFORD SITE LOCKOUT/TAGOUT (LOTO) COMMITTEE CHARTER, REV. 1 51

1.0 PURPOSE

The Hanford Site Lockout/Tagout Procedure implements Occupational Safety and Health Administration (OSHA) Rules and is designed to control hazardous energy and materials during servicing or maintenance or whenever unexpected operation or energization could cause injury.

This procedure requires that only authorized, qualified personnel perform lockout/tagouts.

2.0 SCOPE

The use of this procedure prevents the unexpected start up or release of stored energy that could result in injury or hazardous material exposure.

- This procedure shall be used whenever workers (contractors, subcontractors, vendors, service providers, etc.) are performing servicing or maintenance activities on facility equipment or systems, including construction, where there is any possibility of personnel injury as a result of an unexpected release of energy or hazardous materials.
- A contractor performing greenfield construction with no physical interface to an existing facility shall be designated as the Controlling Organization (CO) and required to follow the Hanford Site Lockout/Tagout Procedure in its entirety.
- This procedure shall be used to control potential hazardous energy to personnel when damaged equipment is removed from service pending corrective action.

Some examples of hazardous energy/materials to be controlled to avoid personnel exposure during service and/or maintenance are:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Chemical
- Radiation Generating Devices (RGD)
- Thermal energy
- Potential energy (springs, compressed gases, suspended objects)
- Hazardous material fluid systems

Activities relating to Electrical Utilities (EU) Operations are addressed per MSC-PRO-EU-066, *Electrical Utilities Lock and Tag Program.* When performance of the work requires facility overlock/overtag of the EU Hold-Off Tag, apply a CO lockout/tagout (LOTO). When interfacing with work groups who do not use DOE-0336, the CO must coordinate the control of the isolation boundary with this procedure.

This procedure does ***not*** apply to the following:

- 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 the unplugging

of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

- 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:
  - Continuity of service is essential;
  - Shutdown of the system is impractical; and
  - Documented procedures are followed, and special equipment is used that will provide proven effective protection for employees.
- Use of locks and/or tags for purposes of long-term equipment shutdown or deactivation (e.g., Administrative Lock Programs).
- Servicing of motor vehicles (servicing and maintenance of auxiliary vehicle-mounted equipment is not exempt and shall be controlled per this procedure).
- Use of Caution Tags.
- Maintenance activities including adjustments or minor tool changes that take place during normal production operation, if they are **routine**, **repetitive**, and **integral** to the use of the equipment and alternative protective measures are employed. In such cases, the employee is not permitted to remove or bypass a guard or other safety device, or place any part of the body within the point-of-operation or danger zone during an operating cycle.
  - Activities requiring machine or equipment shutoff and disassembly, such as changing a machine tool or cutting blade, replacement of belts, valves, gauges, linkages, support structure, etc., that take place outside of the normal production process **DO NOT QUALIFY** for this exception.

3.0 IMPLEMENTATION

This procedure becomes effective as determined by the Integrated Implementation Schedule approved by the Senior Management Team.

4.0 REQUIREMENTS

This procedure implements the LOTO requirements of the *Worker Safety and Health Program* and *Conduct of Operations*.

5.0 PROCESS

This section establishes the process steps for performing LOTO activities. The user may perform only those sections needed. Bullets are used for steps or sub-steps not requiring sequential performance.

5.1. Roles, Responsibilities, and General Administration Requirements

Only qualified personnel may perform LOTO activities.

NOTE: *The Volpentest HAMMER Federal Training Center (HAMMER) "Lockout/Tagout Training Program Description" provides guidance for selecting applicable LOTO training. This document can be accessed via the HAMMER/Hanford Training web page.*

A qualified member of the CO must be current in LOTO training and designated in writing by the responsible organization to perform the work. CO personnel who are assigned to establish safe work boundaries must be a knowledgeable person on the systems to which the boundaries are being established. Personnel performing and/or signing for Safe Condition Checks must be qualified as an Authorized Worker (AW), at a minimum.

To be qualified as an AW, the AW must be current in LOTO training. To perform AW functions, the individual shall be familiar with facility processes and systems or be escorted by an AW that is familiar with them.

Field Work Supervisors (FWS) who oversee work activities requiring LOTO shall be qualified as an AW, at a minimum.

NOTE: *For the tables in this section under the requirement "type" column, "RR" means Roles and Responsibilities, and "GR" means General Requirements.*

Actionee	*Type*	*Roles and Responsibilities*
Authorized Worker (AW)	RR	• Install only their own Authorized Worker Lock(s) (AWL) and Danger tag(s) on the isolation device(s) and/or lockbox(es) for their own safety in accordance with this procedure. • Remove only their AW lock and Danger tag when it does not cause an unsafe condition. • Perform and/or sign Safe Condition Checks for CO. • Perform or witness AW Safe-to-Work Checks. • Request a knowledgeable person as an escort when unfamiliar with a facility and/or system.

Designated Escort	RR	• The escort ensures:
		  ○ Proper isolation boundary walk down.
		  ○ The correct placement of the AWs lock(s) and Danger tag(s).
		  ○ Proper performance of the AWs Safe-to-Work Check.
		  ○ The correct removal of the AWs lock(s) and Danger tag(s).
		• Escorts shall be a qualified AW, at a minimum.

Actionee	*Type*	*Roles and Responsibilities*
Controlling Organization Administrator (COA)	RR	• Responsible for all LOTO functions to include: ○ Evaluate hazards that require the use of LOTO. ○ Determine which method (CO or Eight Criteria) of LOTO to use. ○ Assign, establish, and maintain isolation boundaries. ○ Prepare the Tagout Authorization Form (TAF) (A-6004-460). ○ Ensure that Safe Condition Checks are completed. ○ Authorize the LOTO to be installed. ○ Authorize removal of the CO LOTO. ○ Oversee the LOTO surveillance process, including establishing and documenting periodicity. ○ Provide LOTO hardware and tags. ○ Notify affected worker(s) of impending LOTO. ○ Identify and document CO personnel that may perform LOTO for the facility. ○ Ensure LOTO authorization forms and Eight Criteria LOTO forms are completed in accordance with this procedure. ○ Ensure a LOTO briefing is conducted before installation of LOTOs. ○ Escort, or assign a knowledgeable AW to escort, personnel who are unfamiliar with the facility and/or systems.
CO Qualified Worker (COQW)	RR	• Install, verify, and remove CO's LOTO. • Perform or witness Safe Condition Checks that are performed in support of CO's LOTO.
Field Work Supervisor (FWS)	RR	• Coordinate the installation of AW locks and Danger tags. • Ensure AW LOTO requirements are reevaluated if there is a change in the scope of work. • Coordinate the removal of AW locks and Danger tags. • Ensure that only qualified AWs are assigned to perform LOTO. • Conduct briefings associated with LOTO activities for the COA, as requested. • Escort, or assign a knowledgeable AW to escort, personnel who are unfamiliar with the facility and/or systems.

Actionee	*Type*	*Roles and Responsibilities*
Hanford Site Lockout/Tagout Committee	RR	• Review and approve this procedure and any procedure changes, interpretations, clarification, or guidance. • Review training material to ensure that it is consistent and appropriately covers the application of the procedure.
Lockout/Tagout Technical Authority	RR	• Function as the company's point-of-contact for implementation and interpretation of this program. • Interface with the Hanford Site Lockout/Tagout Committee.
Management	RR	• Ensure required training is maintained and documented. • Designate in writing the LOTO Technical Authority. • Conduct periodic field reviews to ensure program effectiveness. • Conduct an annual review of this procedure per Section 5.12.

Type	*General Requirements*
GR	The preparation and technical review shall be independent activities performed by separate individuals.
GR	During the initial installation of the LOTO, the AWs on the job may observe, at their discretion, the component positioning and Safe Condition Checks for the isolation boundary. Once the CO LOTO has been installed and work has begun, the authorized workers not involved with the initial LOTO installation rely on their system knowledge, briefing, field walkdown and Safe-to-Work Check.
GR	Hardware shall be durable, standardized and substantial.

GR	Locks:
	• AW locks shall:
	  ○ Be green.
	  ○ Be uniquely keyed.
	  ○ Be used with a Danger tag.
	  ○ Have one key that is to remain under the control of the AW, unless using Section 5.10.1 of this procedure.
	• CO locks used with Danger Do Not Operate (DDNO) tags shall:
	  ○ Be red.
	  ○ Be uniquely keyed.
	  ○ Have one key controlled by the CO.
	• Green and red locks shall not be used for any other applications.

Type	*General Requirements*
GR	Lockboxes shall have clear covers.
GR	DDNO and Danger tags shall be manufactured with a grommet and attached in a substantial manner.
GR	Temporary lifting and reinstalling of DDNO tags is not allowed. Tags shall only be used one time and must be destroyed once removed.
GR	Do ***not*** authorize another person to ignore or violate this procedure.
GR	Do ***not*** operate any device upon which a LOTO is installed.
GR	Equipment with an attached LOTO is ***not to be removed*** from the installed location.
GR	All changes made to a TAF or tag shall be done by a single line cross-out and initialing and dating the change. All changes shall be reviewed and initialed by a Preparer and a Technical Reviewer.
GR	If it is determined that the lock should be cut off, then the AW's supervisor, or designee, and a person from the CO, shall be present (as a second check) to verify that it is the correct lock prior to cutting it off.
GR	Do not use an AW lock in place of a CO lockout.
GR	If any discrepancies are found during the LOTO process, stop work and notify the COA.

5.2. Write the Lockout/Tagout

Actionee	*Step*	*Action*
COA (Preparer)	1.	If the work control process identifies hazards, as defined in this procedure, that require the use of LOTO, determine which of the following methods is to be used: • Use of a CO LOTO using a TAF, ***or*** • Use of AW locks and Danger tags alone when **all** of the **Eight Criteria** listed below are met: 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

Actionee	*Step*	*Action*

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 or 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 or maintenance.

7. The servicing or maintenance does not create hazards for other workers.

8. There has been no incident or deficiency involving the use of this exception for the machine or equipment that is pending correction or resolution by the responsible CO or contractor employer.

2. If the Eight Criteria method is selected, go to Section 5.9.

3. Identify the LOTO isolation boundary using any appropriate means necessary (e.g., approved drawings, engineering sketches, databases, documents, Subject Matter Expert [SME] input, and/or a field walkdown).
   - Refer to Appendix C for hazardous energy isolation controls.
   - The facility specific identification on the label should match the identification on the drawing. If it does not, then install a new label (temporary or permanent) or initiate a drawing change. If no drawing is available, use any means necessary to determine the correct identification with concurrence from the system SME.

4. Prepare the TAF (A-6004-460). Appendix B contains TAF clarifications by Block:
   - Block #1: Obtain the next sequential number from the *Tagout Index* (A-6000-514) and enter this number. The number shall also be entered on all additional pages. This step may be deferred to Step 5.3.1.a. The LOTO number is not part of the technical review.

Actionee	*Step*	*Action*
		• Block #2: Enter the page number. • Block #3: Enter the system name, number, or abbreviation. • Block #4: Enter all applicable controlled drawings, drawing change documents, and/or other methods used to establish isolation boundaries. • Block #5: Enter lockbox information. The lockbox information may be filled in at the time of installation. • Block #6: Enter work authorization, procedure number, or step number that is pertinent to this LOTO and consistent with the reason identified in TAF Block #8. Use one line per work authorization/documentation. Enter N/A or TBD if no work authorization/documentation applies. • Block #7: Enter DDNO tag numbers applicable to the work authorization/documentation. • Block #8: Enter summary of work to be performed or the basis for the LOTO. • Block #9: List the personnel hazard(s) that require the LOTO. • Block #13: Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7). • Block #14: Enter any required special instructions. Mark N/A for DDNO tags not requiring special instructions. • Block #17: Enter the LOTO number. This step may be deferred to Step 5.3.1.a. • Block #18: Enter the page number. • Block #19: Enter the sequential number of the DDNO tag (e.g., 1, 2, 3). • Block #20: Enter a clear, specific description that uniquely identifies each component. • Block #21: Enter the location of the component. • Block #22: Enter the lock number, if a lock is required. The lock number may be filled in at the time of installation. Enter "N" in Block #22 if a lock is not required. If a lock cannot be installed, an alternative method of equivalent protection shall be used. Enter the alternative method and equivalent protection indicator information in Block #14. • Block #23: Enter the required position/condition of the component. Use clear and concise terms that appear on the component indicator, when present. See Appendix B for clarifying information.

Actionee	*Step*	*Action*
		• Block #31: Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7). • Block #32: Enter instructions for Safe Condition Check. See Appendix D for guidance, as needed.
	5.	Prepare the DDNO tags to be used. **The information on the DDNO tags shall match the information on the TAF.** See Appendix B for directions, as needed. **NOTE**: *If corrections are required prior to signing Block #10, the TAF shall be re-written. Any changes made after the Preparer has signed Block #10 require approval by a Preparer and Technical Reviewer.*
	6.	Sign and date Block #10 signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	7.	Verify the adequacy and accuracy of the TAF: • The preparation and technical review shall be independent activities performed by separate individuals. • Use controlled drawings, engineering change notices (ECN), facility modification packages (FMP), approved sketches, field walk downs and other available documents and means to verify the adequacy of the LOTO. • Review isolation boundaries and verify that they are technically adequate and administratively accurate to effectively control hazardous energy. • Verify that the TAF and DDNO tags are properly prepared and documented in accordance with this procedure. **NOTE:** *Any changes made after the Technical Reviewer has signed Block #11 require approval by a Preparer and Technical Reviewer.*
	8.	Sign and date Block #11 indicating completion of the technical review.

5.3. Apply the Controlling Organization Lockout/Tagout

The TAF shall be in the possession of the person installing, verifying, performing the Safe Condition Check or removing the DDNO tag(s). If conditions warrant, an up-to-date copy of the TAF may be used, provided the original is 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 Safe Condition Checks for the isolation boundary. Once the CO LOTO has been installed and work has begun, the authorized workers not involved with the initial LOTO installation rely on their system knowledge, briefing, field walkdown, and Safe-to-Work Check.

If discrepancies are found during field activities, stop work and notify the COA.

The locks and DDNO tags can be installed in any order, unless sequencing is specified in Block #14.

5.3.1 Installation of Lockout/Tagouts

Actionee	*Step*	*Action*

COA	a.	Perform the following:
		• If not already completed, obtain the next sequential number from the Tagout Index and enter the number in TAF Block #1 and on any additional pages.
		• Verify all information on TAF is complete and accurate.
		• Review DDNO tag(s) for completeness.
		• Ensure equipment/system conditions support the application of the LOTO.
		• Authorize installation of the locks and DDNO tags by signing and dating TAF Block #24 and associated DDNO tags.
		• Ensure a LOTO pre-installation brief is conducted with personnel performing installation, verification, and Safe Condition Checks including:
		  ○ Any special instructions
		  ○ Relevant hazards and controls
		  ○ Performance of the Safe Condition Check(s)
		  ○ Lockout devices
		  ○ Component positioning
		Individuals may be briefed separately prior to performance of their tasks.
		• Ensure affected personnel are notified of impending LOTO.

COQW (Installer)	b.	Prepare to install the lock and DDNO tag: • Verify TAF and DDNO tag(s) are authorized for installation. • Ensure that any special instructions from TAF Block #14 are met. • Ensure the correct component is in the specified position/condition per TAF Block #23. • Safe Condition Checks may be performed at this time, per Section 5.3.3, prior to installing the lock as long as the component position and the safe condition is maintained until the lock and DDNO tag is installed.

Actionee	*Step*	*Action*
		NOTE: *If interfacing with EU for facility servicing or maintenance under DOE-0336, the EU Hold-Off Tag is overlocked/overtagged by the CO LOTO.*
	c.	Install the lock (if applicable) and DDNO tag: • Place the lock on the correct component and maintain control of each key. • Ensure visually and physically (as long as another LOTO is not installed) that the lockout device is adequately installed to prevent inadvertent operation of the component. • If lock number is not already assigned in Step 5.2.4 or Step 5.8.4, record the lock number in Block #22 on the TAF and DDNO tag. • Install, sign, and date the DDNO tag. Ensure that the DDNO tag is secure and any special instructions from TAF Block #14 are met. The DDNO tag shall be placed on the component or as close as possible without interfering with other indications or controlling devices.
	d.	Sign and date the TAF in Block #25.
	e.	Repeat Steps 5.3.1.b through 5.3.1.d as many times as necessary to install the specified lock(s) and DDNO tag(s).

5.3.2 Independent Verification of CO Lockouts/Tagouts

The verification process is expected to be done independently, but may be performed concurrently if justified in Block #14 of the TAF. The justification shall state why the verification cannot be done independently (e.g., removal of valve handles, fuses removed from a panel and the panel door locked shut).

If position cannot be determined, or isolation/deenergization cannot otherwise be verified, work shall be stopped and the COA shall be notified.

Actionee	*Step*	*Action*
COA	a.	Assign a person other than the one that installed the DDNO tag(s).
COQW/ Verifier	b.	Verify lock (if applicable) and DDNO tag as follows: • TAF and DDNO tag are authorized for installation. • The installation has been performed as directed by the TAF and the in-field information agrees with the TAF. • DDNO tag information is complete. • TAF and DDNO tag have been signed by the Installer. • Any special instructions for verification from TAF Block #14 are met.

Actionee	*Step*	*Action*
		• Installed on component per TAF Block #20. • Position/condition of component is consistent with TAF Block #23. • DDNO tag is secured. • Lock is secured on component. • Verify visually and physically (as long as another LOTO is not installed) that the lockout device is adequately installed to prevent inadvertent operation of the component. • Lock number matches the number recorded in TAF Block #22, as applicable.
	c.	Sign and date the DDNO tag.
	d.	Sign and date the TAF Block #26.
	e.	Repeat Steps 5.3.2.b through 5.3.2.d as many times as necessary to verify the specified lock(s) and DDNO tag(s).
COA/COQW	f.	Verify that the key is controlled for each lock.

5.3.3 Perform Safe Condition Checks

Refer to Appendix D for guidelines for performing Safe Condition Checks.

Actionee	*Step*	*Action*
COQW/AW	a.	If the Safe Condition Check was not completed in Step 5.3.1 then perform or witness Safe Condition Check per TAF Block #32. Ensure any special instructions for performing the Safe Condition Check are met.
	b.	Sign and date the TAF in Block #27.
	c.	Repeat Step 5.3.3.a and Step 5.3.3.b as many times as necessary to complete Safe Condition Checks for the specified lock(s) and DDNO tag(s).

5.3.4 Review TAF

Actionee	*Step*	*Action*
COA/COQW	a.	Ensure that key(s) are controlled in lockbox.
COA	b.	Ensure that the TAF is complete (DDNO tags have been installed, verified, and Safe Condition Checks and lockbox information for Block #5 are completed).

5.3.5 Tagout Index

Steps a. and b. are not required to be completed prior to the release of work but should be completed prior to the end of the shift.

Actionee	*Step*	*Action*
COA	a.	Enter date installed in Block #3 on *Tagout Index* (A-6000-514).
	b.	Establish and document periodicity of LOTO surveillance, at least quarterly, on TAF Block #16. Frequency may be adjusted and documented on TAF Block #16 based on special considerations to include: • Access limitations • Hazards • Duration of TAF

5.4. Perform the Required Field Work

Each AW shall install ***only*** their own AWL. During the initial installation of the LOTO, the AWs on the job may observe, at their discretion, the component positioning and Safe Condition Checks for the isolation boundary. Once the CO LOTO has been installed and work has begun, the authorized workers not involved with the initial LOTO installation rely on their system knowledge, briefing, field walkdown and Safe-to-Work Check.

The FWS/AW will manage a Controlled Work Area in accordance with Appendix E.

If any discrepancies are found during field activities of the LOTO process, stop work and notify the COA.

If the AW will be exposed to unacceptable hazards (e.g., high radiation conditions, confined spaces) while performing a field walk down, a job-specific instruction shall be written and justification for no walk down shall be provided and agreed upon by the COA and AW.

Steps 5.4.1, 5.4.2 and 5.4.3 may be repeated as necessary to support utilizing a Primary Authorized Worker (PAW) prior to the Work Crew designating that individual as the PAW for large, complex LOTOs, provided concurrence from the work crew is subsequently verified during the briefing in Step 5.4.1.

Actionee	*Step*	*Action*

COA/FWS	1.	Perform the following:
		• Verify that the TAF is complete (DDNO tags have been installed, verified, and Safe Condition Checks are complete).
		• Ensure the AW(s) are briefed on the following:
		  ○ Energy isolation boundaries.
		  ○ Any special methods used for energy control.
		  ○ Personnel hazards.
		  ○ Safe Condition Checks.
		• Provide an up-to-date copy of the TAF to the AW(s).
		• Escort or assign a knowledgeable AW to escort personnel who are unfamiliar with the facility and/or systems.

COA/Manager	2.	If using a PAW to perform a Boundary Walkdown, verify requirements as follows:
		a. Authorize the use of a PAW to perform isolation boundary walkdown when:
		  ○ Additional safety hazards exist due to nature of work; or
		  ○ The size of the work crew warrants the use of the PAW.
		
		Each AW can perform their own isolation boundary walkdown, at their discretion.

Work Crew		b. If agreed to by the workers, the Work Crew designates the PAW(s).
AW/PAW	3.	Perform a field walkdown of the identified boundaries and install the AWL as follows: • Verify the information on the AW's Danger tag is complete and legible. • Verify that all the keys and/or equivalent protection indicator(s) are in the lockbox. • Install AWL on lockbox. • Verify DDNO tag(s) are hanging on the required component(s). • Verify that component(s) are in the required position(s)/condition(s). When component position cannot be verified (by system response or visual indication), communicate with the COA for resolution.

Actionee	*Step*	*Action*
PAW	4.	If a PAW was used for a Boundary Walkdown, perform the following: a. Ensure results of the boundary walkdown are communicated to the FWS.
FWS/PAW		b. Communicate to the Work Crew that the LOTO is in place.
AW		c. Verify the information on AW tag is complete and legible. d. Install AWL on lockbox.
COA/Manager	5.	If using a PAW to perform a Safe-to-Work Check, verify requirements as follows: a. When additional safety hazards exist due to the nature of the work, authorize the use of a PAW to perform a Safe-to-Work Check and provide written justification (work package comments, pre-job sheet, etc.). **Each authorized worker can perform or witness a Safe-to-Work Check, at their discretion.**
Work Crew		b. If agreed to by the workers, the Work Crew designates the PAW(s).
AW/PAW	6.	Perform or witness a Safe-to-Work Check: • Prior to the start of work. • Once per shift. • If the configuration has changed. Per the following requirements: • The Safe-to-Work Check shall be performed independently of the Safe Condition Check. • Methods used to perform Safe-to-Work Checks include one or more of the following: o Attempt to restart (ensure personnel are clear of the potential hazard). o Voltage checks shall be conducted where electrical shock hazards exist. o Voltage checks may be requested by an AW when the hazardous energy is mechanical, but the motive force is electrical.

Actionee	*Step*	*Action*
		○ Use of any other appropriate methods to assure energy control.
PAW	7.	If a PAW was used for a Safe-to-Work Check, perform the following: • Ensure the results of the Safe-to-Work Check are communicated to the FWS.
FWS/PAW		• Communicate to the work crew that the Safe-to-Work Check is complete.
AW/PAW	8.	Perform the work: • Re-perform the Safe-to-Work Check as required in Step 5.4.6.
	9.	When the AW is no longer exposed to the hazard(s) controlled by the CO lockout and is ready to remove the AWL: a. Remove the AWL. Each AW shall remove only their own AWLs, except as allowed by Section 5.10.1. b. Notify COA, either directly or through the FWS, that the AWL is removed.
	10.	When an AW is required to return to the job after leaving it unattended, re-perform all of Section 5.4 (once the AWL is removed from the lockbox, the work location is unattended for that AW).

5.5. Clearing a Controlling Organization Lockout/Tagout

Actionee	*Step*	*Action*
COA/FWS	1.	Sign and date in TAF Block #12, indicating that the isolation boundary identified in Block #7 is no longer required.
COA	2.	Prepare to authorize removal: • Verify applicable work task(s) are complete. • Verify system configuration supports LOTO removal. • Verify all AWLs are removed. • Determine it is safe to remove LOTO.

Actionee	*Step*	*Action*

	3.	Approve removal of tag(s) as follows:
		• Sign and date removal approval in TAF Block #28 for each tag.
		• Identify restoration position/condition in TAF Block #29 for each tag.
		• Refer to special instructions in TAF Block #14 for removal instructions, if applicable.
		• Ensure the performance of a pre-removal briefing to include:
		  ○ Restoration position
		  ○ Associated hazards and controls
		  ○ DDNO tag disposition

COQW (Remover)	4.	If authorized to restore equipment to service, ensure that personnel are safely positioned or removed from the area.
	5.	Perform the following for each DDNO tag: • Remove lock and DDNO tag in accordance with TAF, following any applicable removal instructions provided in Block #14. • Ensure component position is as specified in TAF Block #29. • Sign and date TAF Block #30 for each DDNO tag removed.
	6.	Return TAF and DDNO tag(s) to the COA, unless otherwise directed (e.g., contamination areas).
COA	7.	Complete LOTO removal as follows: • Verify correct DDNO tag(s) has been removed. • Notify affected worker(s). • Ensure that DDNO tag(s) are destroyed. • Ensure the completeness and accuracy of the TAF. • Enter closing date in Block #4 on *Tagout Index* (A-6000-514) when LOTO is complete. • Maintain the completed TAF within the LOTO Log for a calendar year and then retain per Section 7.0.

5.6. Partial Clearance of DDNO Tags

Individual DDNO tags may be cleared prior to the clearance of the entire LOTO. Partial clearances are allowed when using multiple work packages on the same TAF, if DDNO tags ARE NOT required by the other listed work packages. Work shall be suspended and associated AWLs removed to accommodate partial clearance.

Actionee	*Step*	*Action*
COA (Preparer)	1.	Prepare the TAF for partial clearance of DDNO tags: • Block #15: Enter DDNO tag number(s) and indicate the reason for partial clearance. • Block #6: Re-enter information. • Block #7: List applicable DDNO tag(s) for new isolation boundary. • Block #8: Enter summary of work to be performed or basis for the DDNO tags. • Block #9: List the personnel hazard(s) that require LOTO.
	2.	TAF Block #10: Sign and date to signify that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	3.	Perform a technical review (See Step 5.2.7).
	4.	Sign and date TAF Block #11, indicating completion of the technical review.
COA	5.	Return to Section 5.5 to clear DDNO tag(s).

5.7. Replacement/Addition of DDNO Tags

This section covers the process for adding DDNO tags or the replacement of missing, damaged, or illegible DDNO tags. Work shall be suspended and associated AWLs removed to accommodate the replacement/addition of DDNO tags.

If replacing a DDNO tag and the lock remains intact, a second Safe Condition Check is not necessary. For previously installed DDNO tags that need to be replaced (e.g., missing, damaged, illegible), the process to partially clear the DDNO tag(s) shall be completed per Section 5.6.

Actionee	*Step*	*Action*
COA (Preparer)	1.	Prepare the TAF for the replacement/addition of DDNO tags: • Block #15: Document reason for addition of DDNO tag(s). • Block #6: Enter work authorization, procedure number, or step number that is pertinent to this LOTO and consistent with the reason identified in TAF Block #8. Use one line per work authorization/documentation. Enter N/A or TBD if no work authorization/documentation applies. • Block #7: Enter DDNO tag numbers applicable to the work authorization/documentation.

Actionee	*Step*	*Action*
		• Block #8: Enter summary of work to be performed or the basis for the LOTO. • Block #9: List the personnel hazard(s) that require the LOTO. • Block #13: Enter the added DDNO tag number(s) (e.g., 1, 2, 3, 4-7). • Block #14: Enter any required special instructions. Mark N/A for DDNO tags not requiring special instructions. • Block #19: Enter the sequential number of the DDNO tag; (i.e., 1, 2, 3). • Block #20: Enter a clear, specific description that uniquely identifies each component. • Block #21: Enter the location of the component. • Block #22: Enter the lock number if a lock is required. The lock number may be filled in at the time of installation. Enter "N" in Block #22 if a lock is not required. If a lock cannot be installed, an alternative method of equivalent protection shall be used. Enter the alternative method and equivalent protection indicator information in Block #14. • Block #23: Enter the required position/condition of the component. Use clear and concise terms that appear on the component indicator, when present. See Appendix B for clarifying information. • Block #31: Enter the number(s) of the DDNO tag(s) (e.g., 1, 2, 3, 4-7). • Block #32: Enter instructions for Safe Condition Check. See Appendix D for guidance, as needed.
	2.	Prepare the DDNO tags to be used. **The information on the DDNO tags shall match the information on the TAF.** See Appendix B for directions as necessary.
	3.	Sign and date Block #10 signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	4.	Perform a technical review to verify the adequacy and accuracy of the isolation boundary and paperwork (See Step 5.2.7).
	5.	Sign and date TAF Block #11 indicating completion of the technical review.
	6.	Complete the LOTO installation as described in Section 5.3.

Actionee	*Step*	*Action*
COA	7.	When new DDNO tags have been added, sign and date TAF Block #12 indicating that the previous isolation boundary in Block #7 is no longer applicable.

5.8. Adding Work Packages to a Previously Installed Lockout/Tagout

Actionee	*Step*	*Action*
COA (Preparer)	1.	Identify the LOTO isolation boundary using any appropriate means necessary (e.g., approved drawings, engineering sketches, databases, documents, SME input, and/or a field walkdown). • Refer to Appendix C for hazardous energy isolation controls. • The facility specific identification on the label should match the identification on the drawing. If it does not, then install a new label (temporary or permanent) or initiate a drawing change. If no drawing is available, use any means necessary to determine the correct identification with concurrence from the system SME. **NOTE:** *Each Work Authorization/Documentation may not use all DDNO tags on the TAF.*
	2.	Determine if additional DDNO tags are required. **NOTE***: It is desirable to perform Safe Condition Checks as near to the work area as possible. Since the new work package may address work to be performed at a different location, under the same isolation boundary, an additional Safe Condition Check may be required at that location.*
	3.	Prepare the TAF. Appendix B contains TAF clarifications by block: • Block #4: Add all applicable controlled drawings, drawing change documents, and/or other methods used to establish isolation boundaries. • Block #5: Update lockbox information, as required. • Block #6: Enter work authorization, procedure number, or step number that is pertinent to this LOTO and consistent with the reason identified in TAF Block #8. Use one line per work authorization/documentation. Enter N/A or TBD if no work authorization/documentation applies. • Block #7: Enter DDNO tag numbers applicable to the work authorization/documentation. • Block #8: Enter summary of work to be performed or the basis for the LOTO.

Actionee	*Step*	*Action*
		• Block #9: List personnel hazard(s) that require the LOTO. • Block #13: Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7). • Block #14: Enter any required special instructions. Mark N/A for DDNO tags not requiring special instructions. • Block #31: Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7). • Block #32: Update or enter additional Safe Condition Checks as required. Specify additional Safe Condition Check by designating as "NEW."
	4.	If no additional DDNO tags are required, proceed to Step 5.8.6. Otherwise perform the following: • Block #15: Document reason for addition of DDNO tag(s) or additional comments, as necessary. • Block #19: Enter the sequential number of the DDNO tag (e.g., 1, 2, 3). • Block #20: Enter a clear, specific description that uniquely identifies each component. • Block #21: Enter the location of the component. • Block #22: Enter the lock number if a lock is required. The lock number may be filled in at the time of installation. Enter "N" in Block #22 if a lock is not required. If a lock cannot be installed, an alternative method of equivalent protection shall be used. Enter the alternative method and equivalent protection indicator information in Block #14. • Block #23: Enter the required position/condition of the component. Use clear and concise terms that appear on the component indicator when present. See Appendix B for clarifying information. • Block #31: Enter all DDNO tag numbers(s); (e.g., 1, 2, 3, 4-7). • Block #32: Enter instructions for Safe Condition Check. See Appendix D for guidance, as needed.
	5.	Prepare the DDNO tags to be used. **The information on the DDNO tags shall match the information on the TAF.** See Appendix B for directions, as needed. **NOTE**: *Any changes made after the Preparer has signed Block #10 require approval by a Preparer and Technical Reviewer.*

Actionee	*Step*	*Action*
	6.	Sign and date Block #10 signifying that the isolation boundary and paperwork are adequate and accurate for the task.
COA (Technical Reviewer)	7.	Verify the adequacy and accuracy of the TAF: • The preparation and technical review shall be independent activities performed by separate individuals. • Use controlled drawings, engineering change notices (ECNs), facility modification packages (FMPs), approved sketches, field walkdowns, and other available documents and means to verify the adequacy of the LOTO. • Review isolation boundaries and verify that they are technically adequate and administratively accurate to effectively control hazardous energy. • Verify that the TAF and additional DDNO tag(s) (if required) are properly prepared and documented in accordance with this procedure. **NOTE**: *Any changes made after the Technical Reviewer has signed Block #11 require approval by a Preparer and Technical Reviewer.*
	8.	Sign and date Block #11, indicating completion of the technical review.
COA/FWS	9.	Ensure that personnel performing work under the TAF are briefed on the following: • Scope of work pertaining to the additional work package. • Requirement for all personnel to be clear of equipment during performance of the Safe-to-Work Checks. This needs to be coordinated with any existing work in progress. • Review any additional Safe Condition Checks as required.
	10.	If installing additional DDNO tags: a. Suspend all work. b. Remove all AWLs from lockbox. c. Perform Section 5.3 for DDNO tag installation.
	11.	If performing "NEW" Safe Condition Checks for existing DDNO tags, perform the following:

Actionee	*Step*	*Action*
COA/FWS		a. Ensure that all personnel are clear of the equipment/system for which the isolation boundary has been established and all work activities listed on the TAF have stopped prior to allowing "NEW" Safe Condition Checks.
AW/COQW		b. Perform or witness "NEW" Safe Condition Check(s) as required. Ensure any special instructions for performing the Safe Condition Check are met.
		c. Block #32: Sign and date the "NEW" Safe Condition Check.
COA/FWS		d. Return to Section 5.4.

5.9. Authorized Worker Locks and Danger Tags Alone Using the Eight Criteria

Use the Eight-Criteria Checklist [A-6003-801] (Eight Criteria are listed in Step 5.2.1) when performing work in this section. The checklist does not authorize work to begin. Follow the normal work control process for the facility/location where work will be performed.

The Field Work Supervisor/Authorized Worker will manage a Controlled Work Area Boundary in accordance with Appendix E during the performance of work.

Actionee	*Step*	*Action*
COA	1.	The readily identified isolation point shall be determined using one or more of the following methods: • A previous TAF or Eight-Criteria Checklist has successfully used the isolation point and is positively known to be accurate. • A positive verification has confirmed the isolation point (e.g., electrical circuit verification using adequately rated test equipment has confirmed the isolation point in an investigative work package). • Visual confirmation of the isolation point is easily determined and positively known to be accurate (e.g., motor visibly connected to the disconnecting means, line of sight).
	2.	Complete the Eight-Criteria Checklist (A-6003-801). **NOTE:** *Steps 3 and 4 can be performed concurrently or in any order.*
COA and AW	3.	Verify and concur that the identified energy isolation point is correct:

Actionee	*Step*	*Action*
		• Agree to use the Eight Criteria or use a CO LOTO.

COA/FWS	4.	Perform the following:
		• Ensure a LOTO pre-installation brief is conducted with AW(s) including:
		  ○ Relevant hazards and controls
		  ○ Performance of the Safe-to-Work Check(s)
		  ○ Lockout devices
		  ○ Component positioning
		NOTE: *Individuals may be briefed separately.*
		• Escort or assign a knowledgeable AW to escort personnel who are unfamiliar with the facility and/or systems.

COA	5.	Notify affected worker(s) of intent to de-energize equipment. **NOTE**: *During the initial installation of the AWL, the AWs on the job may observe, at their discretion, the component positioning and Safe-to-Work Checks for the isolation boundary. Once the work has begun, the authorized workers not involved with the initial LOTO installation rely on their system knowledge, field walk down, and Safe-to-Work Check.*
COQW/AW	6.	Ensure that equipment is shutdown or otherwise de-energized by relieving, disconnecting, restraining, or otherwise rendering safe any stored or residual energy.
	7.	Ensure the component is in the required position: • If a lock and Danger tag will prevent performing the Safe-to-Work Check per Step 5.9.9, then perform the Safe-to-Work Check before installing the lock.
AW	8.	Securely attach the lockout device and completed Danger tag at the same point. Each AW shall install ***only*** their own AWL, except as allowed by Section 5.10.1: • Verify visually and physically (as long as another LOTO is not installed) that the lockout device is adequately installed to prevent inadvertent operation of the component, as desired.
	9.	Perform or witness a Safe-to-Work Check:

Actionee	*Step*	*Action*

		• Prior to the start of work.
		• Once per shift.
		• If the configuration has changed.
		
		Per the following requirements:
		• Methods used to perform Safe-to-Work Checks include one or more of the following:
		  ○ Attempt to restart (ensure personnel are clear of the potential hazard).
		  ○ Voltage checks shall be conducted where electrical shock hazards exist.
		  ○ Voltage checks may be requested by an AW when the hazardous energy is mechanical, but the motive force is electrical.
		  ○ Use of any other appropriate methods to assure energy control.

	10.	Perform work: • Re-perform the Safe-to-Work Checks as required in Step 5.9.9.
	11.	Determine that it is safe to remove the AW lockout device when one or more of the following exists: • Work is complete and/or equipment is in a safe configuration that supports AWL removal, • Other AWs continue to work and maintain control over the isolating device, • A CO LOTO is installed to replace the AWL.
	12.	Remove AWL. Each AW removes ***only*** their own AWL, except as allowed by Section 5.10.1.
	13.	If authorized to restore equipment to service, ensure that personnel are safely positioned or removed from the area.
	14.	Notify the COA, either directly or through the FWS, that the AWL is removed.
	15.	An AW that is required to return to the job after leaving it unattended shall return to Section 5.9.6, but may request an updated LOTO pre-installation brief (once the AWL is removed, the work location is unattended for that AW).

Actionee	*Step*	*Action*
COA	16.	Notify affected workers when LOTO is removed.

5.10. Exceptions

5.10.1 AWL Removal/Reinstallation by a Different AW Using the Eight Criteria

If the removal/reinstallation of the AWL introduces the AW to additional safety hazards (e.g., high radiation, high contamination exposure potential, fall hazard), the AWL may be removed and/or reinstalled by another AW at the request of, and under the verbal direction of, the original AW.

Actionee	*Step*	*Action*
COA	1.	In such extreme non-routine cases, perform the following: a. Formally document this exception (e.g., work package, work record, acceptance test plan). b. Conduct briefing with all involved workers.
AW	2.	Perform the initial application of the AWL in accordance with Section 5.9.
	3.	Establish direct communications between original AW and person removing/reinstalling the AWL.
	4.	Remove/reinstall AWL as directed by the original AW. • Perform Safe-to-Work Check each time AWL is reapplied.

5.10.2 Removal of Energy Control Device(s) when AW is Not Present on Hanford Site

Actionee	*Step*	*Action*
Manager/ Supervisor	1.	Verify that the AW who applied the AWL is ***not*** on the Hanford Site. Employees in training at the HAMMER facility are not considered to be on the Hanford Site.
	2.	Make all reasonable efforts to contact and inform the AW that their AWL will be removed. • A documented conversation with the AW is considered adequate. • If the AW cannot be contacted and a message was left, the AW's management may direct removal of the AWL.

Actionee	*Step*	*Action*
Manager/ Supervisor and COA	3.	If it is determined that the AWL should be cut off, then the AWs supervisor, or designee, and a person from the CO shall be present (as a second check) to verify that it is the correct AWL prior to cutting it off.
	4.	Determine that it is safe to remove the AWL.
	5.	Confirm that it is the correct AWL and remove it.
	6.	Inform the AW of the AWL removal promptly upon their return to work.

5.11. Controlling Organization Lockout/Tagout Surveillance Process

The Controlling Organization shall have a process to track periodic surveillances (e.g., tickle file).

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 periodic surveillance.

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

Actionee	*Step*	*Action*
COA	1.	Perform and document surveillance using a *Lock and Tag Surveillance Checklist* (A-6003-747).
	2.	For all CO lock(s) or DDNO tag(s) found missing, damaged, or illegible at the time of the surveillance, return to Section 5.7.
	3.	TAF Block #16: Initial and date for the completion of the surveillance on each TAF reviewed.

5.12. Hazardous Energy Control Periodic Review

Actionee	*Step*	*Action*
Individual Contractor Management	1.	Coordinate the performance of an annual review utilizing lines of inquiry developed by the Hanford Site LOTO Committee.

Actionee	*Step*	*Action*
COA	2.	Make arrangements with two qualified persons (AW, COA, COQW), with at least one being independent of the LOTO process at the facility, to perform an annual periodic review: • Perform a walkdown of 100% of the installed TAFs (This step may be performed in conjunction with the surveillance per Section 5.11). • Review current calendar year TAFs (inactive) and available Eight-Criteria Checklists for compliance. • Document results of the review.
Individual Contractor Management	3.	Review results of surveillance and process through corrective action management program.
Training	4.	Provide AWs the opportunity to submit input and feedback into this procedure annually: • Discussion of individual responsibilities, • Does the program provide adequate protection for the worker? **NOTE:** *This activity occurs during annual Refresher Training.*
Hanford Site Lockout/ Tagout Committee	5.	Complete the following: • Review data for trends and common problems for the site. • Provide follow-up information to facilities regarding corrective actions and compliance issues.

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.

3x5-1/2 *Danger Tag*, (AW) 54-6001-955, Passport ID 551639

7-3/8x4 *Danger Do Not Operate Tag*, 37-8350-035, Passport ID 551450

2-1/2x3 *Danger Do Not Operate Tag*, 37-8350-036, Passport ID 551451

Eight-Criteria Checklist, A-6003-801

Lock and Tag Surveillance Checklist, A-6003-747

Lockout/Tagout Surveillance Continuation Form, A-6004-461

Lockout/Tagout Authorization Form, A-6004-460

Tagout Index, A-6000-514

7.0 RECORD IDENTIFICATION

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

Records Capture Table

Name of Document	Submittal Responsibility	Retention Responsibility
Lockout/Tagout Authorization Form, A-6004-460	Initiator	Work package, minor work authorization, or Project records
Eight-Criteria Checklist, A-6003-801	Initiator	Work package, minor work authorization, or Project records
Tagout Index, A-6000-514	Initiator	Work package, minor work authorization, or Project records
Lock and Tag Surveillance Checklist, A-6003-747	Initiator	Project records
Hazardous Energy Control Program annual periodic review inspection records, including deficiencies	Facility Management	Project records

8.0 REFERENCES

10 CFR 851, *Worker Safety and Health Program*.

CRD O 422.1, *Conduct of Operations*.

MSC-PRO-066, *Electrical Utilities Lock and Tag Program*.

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

U.S. Code of Federal Regulations, Title 29, Labor, Part 1910.147, *The Control of Hazardous Energy (Lockout/Tagout)*.

U.S. Code of Federal Regulations, Title 29, Labor, Part 1910.333, *Lockout and Tagging*.

DOE-0359, *Hanford Site Electrical Safety Program*.

APPENDIX A: DEFINITIONS AND ACRONYMS

Affected Worker	A person whose job requires them to operate or use a machine or piece of equipment on which servicing or maintenance is being performed, or whose job requires them to work in the area where servicing or maintenance is being performed under LOTO.
Authorized Worker (AW)	A person who installs and removes their AW lock and Danger tag on a lockbox or an isolation component for equipment or systems to perform servicing or maintenance on that equipment or system.
Authorized Worker Lock (AWL)	A green lock and Danger tag combination used by Authorized Workers to control all sources of hazardous energy such that operation of the isolation component is prohibited and forcible removal of the lock is required for operation.
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 energy.
Component	A device that controls the transmission or release of energy or hazardous materials. Examples include restraint blocks, electrical circuit breakers, disconnect switches, slide gates, slip blinds, or line valves.
Controlled Work Area	An area within which hazards are controlled by a LOTO and shall be established whenever barriers such as guards or other safety devices are removed (See Appendix E).
Controlling Organization (CO)	The organization responsible for establishing and maintaining isolation boundaries associated with the work to be performed.
Controlling Organization Administrator (COA)	Individuals designated by CO management and trained to perform LOTO preparation, technical review, or authorization. The COA is trained to the same level as a Controlling Organization Qualified Worker (COQW) and may perform assigned activities as a COQW.

Controlling Organization Qualified Worker (COQW)	Individual designated by CO management and trained to perform CO LOTO installation, independent verification, Safe Condition Checks, and removal.
Danger Do Not Operate (DDNO) Tag	The tag used by COs for hazardous energy or hazardous material LOTOs. This tag and its use are specific to the CO. Servicing or maintenance shall not be performed under this tag unless an AWL has been installed by an AW.
Danger Tag	The tag used by AWs to perform LOTO. This tag is used with a lock for the personal protection of the AW who is performing servicing or maintenance under this tag.
Durable	Lockout and tagout devices capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
Energy Source	Any source of hazardous energy or materials. Sources include electrical, mechanical, hydraulic, pneumatic, chemical (toxic, hazardous, dangerous, radiological, carcinogenic), radiation generating devices, and thermal energies, as well as various forms of potential energy, such as that stored in springs, compressed gases, or in suspended objects (gravitational).
Equipment	Machinery and systems upon which servicing and maintenance is performed. In the context of the Eight Criteria, the term equipment must consider the entire work scope and hazards.
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.
Exclusive Control	The authorized employee has the authority to, and is continuously in a position to, prevent (exclude) other individuals from re-energizing the machine or equipment utilizing the Eight Criteria. This term also applies during servicing or maintenance using the cord and plug exception.

Field Work Supervisor (FWS)	An individual who supervises work teams to ensure the safe and compliant performance of work. Field Work Supervisor is equivalent to various supervisor terms (e.g. Supervisor, Person in Charge [PIC], First Line Manager, Foreman, Superintendent).
Gagging Device	A device designed to block off or obstruct operation of a valve (also called "jacking device").
Greenfield Construction	A new installation of facilities, equipment, or systems that cannot directly affect an existing operational configuration.
Independent Verification	An additional verification by a second individual, operating independently after the original performance, to verify that a specified condition exists. Independence means that the person performing the verification will not be influenced by observation of, or involvement in, the activity that establishes the component position or status. For most operating activities, independence can best be achieved by separating the operation and the verification by time and distance.
Installed	A CO LOTO is considered installed after the TAF has been signed by both the installer and verifier, all Safe Condition Checks have been performed, and keys are properly controlled.
Installer	The COQW that installs the LOTO.
Isolation Boundary	Those isolating components that are configured and checked to provide a safe condition where servicing and maintenance are to be performed.
Knowledgeable Person	One who possesses the skill, expertise, or demonstrated ability (through education, training, or experience) to determine safe work boundaries for LOTO on specific equipment or systems to accomplish effective control of hazardous energy.

Lock	A uniquely keyed device (not a combination lock) that holds a component in the required position for the protection of personnel.
Lockbox	A lockable container with a clear cover that contains keys and equivalent protection indicators (e.g., hand wheels, fuses, tags).
Lockout/Tagout (LOTO)	The process designed to control hazardous energy and materials during servicing or maintenance or whenever unexpected operation or energization could cause injury.
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.
Logbook	A binder(s) that contains, at a minimum, the Tagout Index and the active TAFs. The logbook may contain a list of CO personnel, procedure(s), and other LOTO information.
Normal Production Operations	The utilization of equipment to perform its intended production function.
Overlock/Overtag	Installation of a LOTO on top of another LOTO. Examples include: • The installation of an AWL on a lockbox. • The installation of a CO LOTO on top of an EU Hold-Off Tag. • The installation of a CO LOTO on top of another facility's CO LOTO.
Partial Clearance	Clearing DDNO tag(s) from an existing isolation boundary.
Preparer	A COA knowledgeable on the system or equipment and designated to develop the LOTO.

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 AWs.
Readily Identified	Easily determined to be the correct component for the equipment or system to be serviced and is positively known to be accurate, by both the CO and AW. This is accomplished by visual confirmation or a review of verified documentation reflecting current system configuration. Verified documentation shall include a previous LOTO or investigative work package containing electrical circuit confirmation.
Remover	The COQW that removes the installed LOTO.
Safe Condition Check	The comprehensive inspection or test of the isolation boundary performed to verify that the isolation boundary is adequate to prevent exposure from all identified sources of hazardous energy/material.
Safe-to-Work Check	The inspection or test performed or witnessed by the AW to verify that no hazardous energy exists where servicing or maintenance will be performed.
Servicing and/or Maintenance	Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of equipment, and making adjustments where the employee may be exposed to the *unexpected* energization or startup of the equipment or release of hazardous energy.

Substantial	(1) *Lockout devices.* Lockout devices are 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. (2) *Tagout devices.* Tagout devices, including their means of attachment, are substantial enough to prevent inadvertent or accidental removal. All DDNO and Danger tags shall be attached by grommet and/or by a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.
Technical Review	An independent review of the TAF, DDNO tags and the isolating boundary to verify that they are technically adequate and administratively accurate.
Technical Reviewer	A COA that is knowledgeable on the equipment or system and designated to perform the independent technical review of a LOTO.
Unattended	The job location is unattended for an AW when their AWL is removed. Equipment or lockbox with an AWL installed is considered attended for that worker.
Verifier	The COQW that performs the independent verification.
Work Crew	All personnel involved with the field work, including the FWS.
Work Documentation	Procedures, work packages, job hazard analyses (e.g., Automated Job Hazard Analysis), TAFs, checklists, permits, instructions, and associated documents used in the field to directly control the work being performed.

ACRONYM LIST

AW	Authorized Worker
AWL	Authorized Worker Lock
CO	Controlling Organization
COA	Controlling Organization Administrator
COQW	Controlling Organization Qualified Worker
DDNO	Danger Do Not Operate
ECN	Engineering Change Notices
EU	Electrical Utilities
FMP	Facility Modification Packages
FWS	Field Work Supervisor
GR	General Requirement
LOTO	Lockout/Tagout
MCC	Motor Control Center
OSHA	Occupational Safety and Health Administration
PAW	Primary Authorized Worker
RGD	Radiation Generating Device
RR	Roles and Responsibilities
SME	Subject Matter Expert
SOM	Shift Operations Manager
TAF	Tagout Authorization Form

APPENDIX B: LOCKOUT/TAGOUT FORMS CLARIFICATIONS/DIRECTIONS

Complete the blocks legibly in permanent and reproducible ink or electronically using the forms listed in Section 6.0. **Block numbers do not specify sequential performance.**

Tagout Authorization Form	
TAF Block #	**How to Complete This Block**
1.	Enter the next sequential number from the *Tagout Index* (A-6000-514); include on all additional pages of the TAF.
2.	Enter page number.
3.	Enter the system name, number, or abbreviation.
4.	Enter the identification of all applicable control drawings, drawing change documents, and/or other methods used to establish isolation boundaries.
5.	Enter lockbox information (e.g., lockbox number, lockbox location).
6.	Enter work authorization, procedure number, or step number that is pertinent to this LOTO and consistent with the reason identified in TAF Block #8. Use one line per work authorization/documentation. Enter N/A or TBD if no work authorization/documentation applies.
7.	Enter DDNO tag number(s) applicable to the associated work authorization/ documentation. • This block shall show all current DDNO tags providing the isolation boundary (e.g., 1, 2, 3, 4, or 1 thru 4, or 1-4). • Each set of DDNO tags needs to independently support the work document in Block #6. • When doing partial clearance, addition(s), or replacement(s), list applicable DDNO tags for new isolation boundary.
8.	Summarize the work that is to be performed or the basis for the LOTO.

9.	List the hazards that require the LOTO. Some examples are: • Electrical • Mechanical • Hydraulic • Pneumatic • Chemical • Radiation Generating Devices (RGD) • Thermal energy • Potential energy (springs, compressed gases, suspended objects) • Hazardous material fluid systems
10.	The preparer shall sign this block prior to presenting for technical review. By signing this block, the preparer is stating that the TAF and DDNO tags are complete, technically accurate, and adequate to support the work. The person that signs for "prepared by" ***shall not*** sign for "technical review."
11.	The technical reviewer signs this block after using whatever means necessary to verify: • The isolation boundary is adequate for the work. • The TAF is completed correctly. • The DDNO tags are correct. The person that signs for "technical review" ***shall not*** sign for "prepared by."
12.	Sign and date Block #12 indicating that the isolation boundary identified is no longer needed.
13.	Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7).
14.	Enter any special instructions associated with installing or removing applicable DDNO tag number(s), as listed in Block #13, such as: • Sequence of DDNO tag installation/removal. • When unable to use a lock, an alternate method to provide protection equivalent to a LOTO is required. Write that information in this block (e.g., removing an isolating circuit element or fuse, blocking switch controls, opening extra circuit disconnects, physical barriers, and removing valve handles). Equivalent protection indicator shall be identified. • Mark "N/A" for DDNO tags not requiring special instructions. • If the verification cannot be done independently, state the reason why in this block.

15.	Enter the DDNO tag number(s) with reason for partial clearance or addition of DDNO tag(s), or other comments.
16.	Document surveillance periodicity. See Step 5.3.5.b. When the surveillance is complete, initial the block and enter the date. Frequency may be adjusted and documented on TAF Block #16 based on special considerations related to access limitations, hazards, and duration of TAF.
17.	Enter the LOTO number (from Block #1): include on all additional pages of the TAF.
18.	Enter the page number.
19.	Enter the sequential number of the DDNO tag (e.g., 1, 2, 3).
20.	Enter a clear, specific description that ***uniquely*** identifies each component, including one or more of the following: • Component name • Facility specific identification number • Nameplate information Additional information such as a noun name descriptor or which electrical loads are supplied, while not necessarily on the label, may be added to the TAF and DDNO tag for clarification. Additional information that is written on the label in the field such as "Fed from breaker XX" is not considered part of the facility specific identification number and does not need to be written on the TAF or the DDNO tags. This information is entered on the DDNO tag exactly as written on the TAF.
21.	Identify the location of the component (e.g., room, building number, system, MCC).
22.	Write lock number. The lock number may be filled in at the time of installation. Enter "N" if a lock is not required. If a lock cannot be installed, an alternative method of equivalent protection is to be used. Enter the alternative method and equivalent protection indicator information in Block #14.
23.	Enter the required position/condition. List the actual manufacturer's position indicators in Block #23 and on the tag. Use the clear and concise terms that appear on the indicators for the component. A universal operating term (e.g., OPEN/CLOSED,

	ON/OFF) can be included for clarification. Any difference between the manufacturer's position indication and the required position per the TAF and tag shall be discussed in the pre-installation briefing.
24.	Determine if DDNO tag(s) installation is ready to be authorized. Sign and date TAF and each associated DDNO tag to be installed.
25.	Ensure the following: • TAF and DDNO tag are authorized for installation. • Special instructions for installation are met. • The correct component is in the position specified in Block #23. • Install the CO lock (if applicable) on the component to prevent repositioning. • Secure the DDNO tag. • Ensure visually and physically (as long as another LOTO is not installed) that the lockout device is adequately installed to prevent inadvertent operation of the component. • Sign and date the DDNO tag. After ensuring the items above: • Sign and date the TAF.
26.	Verify lock and DDNO tag as follows: • TAF and DDNO tag are authorized for installation. • Special instructions for verification are met. • Installed on component per Block #20. Position/condition of component is correct as defined in Block #23. • Verify visually and physically (as long as another LOTO is not installed) that the lockout device is adequately installed to prevent inadvertent operation of the component. • The lock number matches Block #22. • The DDNO tag is secured. • The DDNO tag is signed and dated by the Installer. • The TAF is signed and dated by the Installer. After verifying the above information: • Sign and date the DDNO tag. • Sign and date the TAF.
27.	Perform or witness the Safe Condition Check as described in Block #32. • Sign and date the TAF.

28.	When signed, the DDNO tag is authorized to be removed. Before signing this block, ensure that the DDNO tag is no longer needed to support any identified isolation boundary(s). Verify: • Block #12 has been signed. • It is safe to remove the lock and DDNO tag. • All AWLs are removed. • System configuration supports LOTO removal.
29.	Enter the position that the component is to be left in after clearing the LOTO. Always indicate a position even if it is the same as was required by the LOTO.
30.	Remove the LOTO: • Verify that Block #28 for this DDNO tag has been signed. • Remove the lock and DDNO tag, leaving component in the position required in Block #29. Refer to the special instructions in Block #14 if necessary. • Sign and date the TAF. • Return TAF and DDNO tag(s) to the COA or as directed.
31.	Enter all DDNO tag number(s) (e.g., 1, 2, 3, 4-7).
32.	Enter the Safe Condition Check instructions, or the step of the work document describing the Safe Condition Check (e.g., methods, location). Consider the entire isolation boundary when determining the Safe Condition Check. Refer to Appendix D. **NOTE:** *Reference previous Safe Condition Checks for missing or damaged DDNO tag replacements if the lockout device remained in place.* If added work packages require additional Safe Condition Checks and Block #27 has already been signed, identify the new Safe Condition Check and designate it as "NEW." The Safe Condition Check signature and date can be entered next to the "NEW" safe condition entry (See Section 5.8).

Tagout Index	
Index Block #	**How to Fill Out This Block**
1.	Maintain a sequential list of facility specific numbers.
2.	Identify the system or component(s) being isolated. It is not necessary to list where the DDNO tag(s) are being placed.
3.	Enter the date that the LOTO was installed.
4.	Enter the date that all installed DDNO tag(s) were removed and the TAF was no longer required.

Danger Do Not Operate Tag	
Component Tagged	Enter information from TAF Block #20.
Component Position	Enter information from TAF Block #23.
Lockout/Tagout No.	Enter information from TAF Block #1.
DDNO Tag No.	Enter information from TAF Block #19.
Logbook Location	State the location of the logbook at the facility (room #, SOM office, etc.). Be specific enough for facility personnel to know where to find it.
Lock No.	Enter information from TAF Block #22. The lock number may be filled in at the time of installation.
Authorized by:	Signed and dated by COA. Use the criteria for completing TAF Block #24.
Installed by:	Signed and dated by COQW. Use the criteria for completing TAF Block #25.
Verified by:	Signed and dated by COQW. Use the criteria for completing TAF Block #26.

Danger Tag	
Name	AW Name
Organization	Company and/or Work Group
Supervisor	AWs Supervisor Name
Telephone Number	Supervisor's Telephone Number

APPENDIX C: HAZARDOUS ENERGY ISOLATION CONTROLS

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

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.

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 Flash Protection 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 components 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. Do ***not*** use electrical control circuits as LOTO isolation points, 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 be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device. Document all steps taken in order to demonstrate that the tagout is as effective as a LOTO.
5. Simple Plug-In Electrical Tools/Equipment. LOTO is not required for plug-in electrical equipment if both of the following apply:
    a. Exposure to the hazards of unexpected energization or startup of the equipment is controlled by unplugging the equipment from the energy source, and
    b. The plug is under the exclusive control of the employee performing the servicing or

maintenance, at all times.

If work must be left prior to completion, return to a safe condition, establish a barricade, or other alerting technique in accordance with DOE-0359, *Hanford Site Electrical Safety Program*, or install LOTO in accordance with this procedure.

6. Energized Electrical Work. For work where de-energizing live parts is infeasible or otherwise justified, refer to DOE-0359, *Hanford Site Electrical Safety Program*.

7. 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 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. Refer to Section 1.6 of this Appendix.

2.0 ISOLATING, ROTATING, OR MOVING EQUIPMENT

1. Install LOTO on the energy source(s) when working on rotating equipment.
2. Do not use power control switches as LOTO isolation points 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, or
2. Disconnect batteries or other sources of power and remove or disconnect one or more essential operating part(s) (coil wire, rotor, etc.) retaining it under control of the AW.

4.0 ISOLATING LOW TEMPERATURE/PRESSURE FLUID SYSTEMS (LIQUID OR GAS)

NOTE: *Although steam condensate systems usually operate at relatively low temperatures and pressures, backfeeds, multiple energy sources, trap failures, etc., can create significant hazards to personnel. Evaluate each situation carefully:*

- Establish LOTOs for systems that 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 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 components 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 component to be worked on and sources of pressure to the component should be locked in the open position to depressurize the equipment and to accommodate thermal expansion or contraction.
4. If a normal depressurization path cannot be provided within the isolation boundary, develop a written work plan using other methods to ensure that the system or component is adequately isolated, depressurized, and drained (such as loosening the fasteners on flanged connections or valve bonnets, removing instrument tubing, etc.).

5.0 ISOLATING HIGH TEMPERATURE/PRESSURE SYSTEMS/CRYOGENIC FLUIDS/LIQUID METALS/STEAM

NOTE 1: *Two-valve protection is **not** required for gas cylinders.*

NOTE 2: *Although steam condensate systems usually operate at relatively medium-high temperatures and low pressures, backfeeds, multiple energy sources, trap failures, etc., can create significant hazards to personnel. Evaluate each situation carefully.*

When isolating steam systems or equipment whose operating temperature exceeds 200° F, operating pressure exceeds 500 psig, or systems that contain liquid metals or cryogenic fluids, observe the following limits in addition to those in Section 4.0 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. A LOTO shall be installed on an open atmospheric drain or vent to depressurize the equipment. For work involving confined space, the drain or vent must be between the two valves.

3. Single-valve isolation may be used per Section 4.0 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. If the required two-valve protection cannot be obtained, write a job specific instruction in the work instructions identifying the hazards and work methods to achieve protection equivalent to two-valve isolation. It shall be approved by the Safety Organization and the COA with agreement from the AW. The following conditions shall be met:

   a. Alternate isolation devices (such as blank flanges, blocks, or freeze seals) have been considered and determined to be infeasible or impractical.

   b. The integrity of the single isolation valve is verified by venting or draining the portion of the system to be worked on and observing for leakage for at least 15 minutes to verify positive valve closure and leak tightness before starting work.

6.0 ISOLATING HAZARDOUS MATERIAL FLUID SYSTEMS

1. Systems containing hazardous materials (e.g., acids, bases, radiological) shall be evaluated to determine if it meets the hazardous energy criterion which requires it to be isolated with LOTO and the isolated section should be depressurized. 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.
   Systems containing tank waste shall be isolated by one or more of the following methods:
   a. Electrically isolating physically connected waste transfer pumps.
   b. Applying two-valve protection on physically connected waste transfer lines. Verifying two-valve protection will satisfy Safe Condition Check requirements.

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

7.0 VALVE ISOLATION PRACTICES

1. Valves that Fail Open/Shut. Do ***not*** consider pneumatically or electrically operated valves shut for isolation purposes unless the valve operating supplies are isolated and LOTO installed and a jacking device or gagging device is installed and LOTO installed to shut or keep the valve shut.

2. Relief Valves. Relief valves and pressure safety valves are ***not*** used for isolation purposes.

3. Regulators/Check Valves. Do ***not*** use regulators and check valves as a LOTO isolation point unless the valve is mechanically restrained in the required position with a gagging device designed for that purpose.

8.0 STORED ENERGY CONSIDERATIONS

1. Sources of stored energy shall be blocked or otherwise relieved:
   - Springs shall be released and physical restraints shall be applied when necessary.
   - Pneumatic and hydraulic reservoirs shall be depressurized.
   - Capacitors shall be discharged.
   - Rotating equipment hazards (e.g., fans) shall be controlled.

2. When blocking or securing devices are used, control by installing LOTO per this procedure.

APPENDIX D: GUIDELINES FOR PERFORMING SAFE CONDITION CHECKS

This section provides guidelines to ensure safe conditions are established when specifying the isolation boundaries for each of the hazard types listed. The COA determines the appropriate type of Safe Condition Check based on the risk to the worker and the hazards identified. The Safe Condition Check should include methods and locations specific to each test.

1.0 Safe Condition Check for Electrical Energy

1. If the hazard being controlled involves direct exposure to electrical energy, including shock or arc flash hazards, the following requirements apply. Requirements applicable to other hazards associated with electrically driven equipment (for example, rotating or moving equipment) are provided in Section 2.0 of this Appendix.

Testing of De-energized Electrical Circuits

2. 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.
   - Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are de-energized.
   - Test each phase conductor or circuit part both phase-to-phase and phase-to-ground.
   - Before and after each test, determine that the voltage detector is operating satisfactorily.
   - Except in cases where not practical, or in the presence of a greater hazard (e.g., unnecessary exposure), electrical Safe Condition Check(s) are to be performed at the physical work location or the closest accessible isolation device, component, or test point that will allow for a comprehensive test of the isolation boundary. Additional checks are allowable at the isolating device, when desired or deemed necessary.
   - Where there is no accessible exposed point to take voltage measurements, planning shall include methods of verification.
   - In some cases, observing the voltage go away during the actuation of an isolating device provides an additional level of protection and is considered an acceptable Safe Condition Check.

2.0 Safe Condition Checks 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. Position indicators on electrical isolation devices or disconnecting devices are checked to verify the devices are electrically open.

3.0 Safe Condition Checks for Fluid Systems

1. Vent(s) and/or drain valve(s) shall be monitored after the system is drained or vented to verify that system pressure is released.
2. Verifying depressurization by breaking flanged connections, loosening valve bonnets, removing instrument tubing, or other similar actions should be avoided unless no other means for verifying depressurization exist. Strict supervisory controls and advance planning are required if these methods are used.
3. In cases where verification that hazardous fluid systems are depressurized and drained is not feasible as a Safe Condition Check, other options may be appropriate if addressed in TAF Block #14, Special Instructions, and/or TAF Block #32, Safe Condition Checks.

APPENDIX E: CONTROLLED WORK AREA

A Controlled Work Area is an area within which hazards are controlled by a LOTO.

A Controlled Work Area shall be established whenever barriers such as guards or other safety devices are removed. During work and when left unattended, this area will be demarcated with safety signs, tags, barricades, and/or Attendants. When used, the Attendant(s) shall be an AW and a member of the work crew in the Controlled Work Area. The Attendant shall be made aware of the size of the Controlled Work Area and the potential hazards present.

Persons entering Controlled Work Areas are Authorized Workers and must have positive control of all hazards (e.g., arc flash, electrical shock, rotating, pressure) by installing their AWL prior to entering the Controlled Work Area. In cases where the LOTO component is inside the Controlled Work Area, the AW may enter the area to support installation of their AWL prior to performing servicing or maintenance.

The Controlled Work Area shall be large enough to allow work to be performed and encompass electrical approach boundaries and arc flash boundaries.

The Controlled Work Area shall be removed when the hazards are no longer present and/or the work is completed (e.g., guards reinstalled, panel doors closed).

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

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:

- Mission Support Contract (MSC)
- Plateau Remediation Contract (PRC)
- River Corridor Contract (RCC)
- Tank Operations Contract (TOC)

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 MSC shall provide a recording secretary for the Committee. The recording secretary provides administrative support. A facilitator shall be provided by the MSC 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 MSC with the implementation and maintenance of the written Procedure.
- Communicate and submit Procedure changes to RL and ORP through the MSC.
- 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 (MSC-MP-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 actions 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.

John C. Fulton
President and Chief Executive Officer
CH2M HILL Plateau Remediation Company

9/10/13
Date

J. Frank Armijo
President and General Manager
Mission Support Alliance, LLC

9/18/13
Date

C. A. Johnson
President & Project Manager
Washington Closure Hanford, LLC

9/30/2013
Date

L. David Olson
President & Project Manager
Washington River Protection Solutions, LLC

8/4/13
Date

Douglas J. Kollasch
Principal Manager
HPMC Occupational Medical Services

28 Aug 2013
Date

David E. Molnaa
President
Hanford Atomic Metal Trades Council

11/18/13
Date

David P. Davis, President
Central Washington Building & Construction
Trades Council

Sept 25, 2013
Date