Approved

ORNL WORK PLAN

Operations, Maintenance and Services

Work Plan Name / Rev: MWP061732 / 0
Expiration Date: 9/10/2025

61732

WORK SCOPE/DESCRIPTION	
Requester (Name/Badge/Division):	Moore, Andrew / 03022839 / X108
Location of work (Bldg/Rm/Other):	7930 / / 2nd and 3rd Floor, Room 204 Area
Work Plan Title:	Mock-Up for 7920 Tank Pit Repairs at Building 7930.

Description of Service/Work Needed:
7930 (3rd floor to second floor area, directly above the Truck Bay) will be use to mock-up and practice the use of 7 extension tools 24' in length prior to use at 7920 tank pit. This location has been selected for its overhead clearance and ability to use an approved scissor lift, thus mimicking the distance from worker to "tank pit top" in 7920, and allowing workers to familiarize themselves with the tools prior to performing the work in a hazardous environment .

Charge Number, if required:	
Work Plan Grade/Worktype:	1 / A
Author (Name/Badge):	Moore, Andrew / 03022839

File Attachments:

Badge	Name	Attachment Desc	File Name
03022839	Moore, Andrew	Pictures	7930 Mock-Up Pic.pdf
03116541	Carnahan, Corey	QEA	MWP061732 QEA 9.6.24.pdf
03022839	Moore, Andrew	EUSQD	EUSQD_REDC_24-107_R0 (Final with Signatures) 09-05-2024.pdf

INSTRUCTIONS

Prerequisites/Precautions:

Does this work apply to a Hazard Category 1, 2, or 3 NuclearFacility? If yes, do any of the following apply (as determined by aUSQ-qualified person)?

1. Is it a physical change? No.

2. Is it a change to a procedure or program described in thedocumented safety analysis? No.

3. Is it a new or revised operation? No.

Directions:

- Proper PPE is to be used in performance of tasks.

- Notify Building Supervision/Facility Management prior tostarting work.

- Waste generated is disposed of in accordance withestablished ORNL procedures.

- Ensure work area is clean and free of hazards duringperformance of work.

Post Work Testing:

Closeout:

- Ensure work area is clean and free of hazards prior toleaving it.

- Provide feedback to Building Supervision and Task Leader.

JOB HAZARD EVALUATION

HAZARDS	PERMITS / CONTROLS
Deenergized Hazardous Energy Sources (LTV): LTV overhead crane to prevent tool extensions from coming in contact with bus bars	ORNL-213, ORNL Lock/Tag/Verify Permit form OR ORNL-214, ORNL Lock/Tag/Verify Permit Continuation form OR ORNL-215, ORNL Lock/Tag/Verify Permit Temporary Suspension form

	ı Perform Simple Lock/Tag/Verify - Work meets all criteria for Simple LTV ¡ No potential for stored, residual energy or re-accumulation of energy after shutdown ¡ For a single hazardous energy source that can be: Identified, isolated, and locked ¡ Isolation of single energy source completely de-energizes & deactivates equipment/system ¡ Energy source is isolated and locked out during service/maintenance ¡ Single lockout device will achieve a locked-out condition. ¡ Lockout is under personal control for each staff performing work ¡ Work creates no hazard for other staff ¡ Equipment/system has no known history of unexpected activation or re-energization during maintenance or servicing Otherwise: Perform Complex Lock/Tag/Verify
Radiological Work	ı Radiological Work Permit (Enter RWP no.) ı Dosimetry Monitoring Requirements ı Follow radiological posting, entry control & egress requirements ı Respond to Abnormal Radiological Conditions and Alarms. Radiological alarms include: Continuous Air Monitor (CAM), Area Radiation Monitor (ARM), Electronic Pocket Dosimeter (EPD), Personnel Contamination Monitor (PCM).
Elevated Work: Working from Scissor Lift adjacent to Ledge.	ı Aerial Lifts (Boom, Articulating, Telescoping, Scissor, Bucket, etc.)
Ergonomic Conditions (Contact Stress, Vibration, Posture, Force, Repetitive Motion): Working with custom extension tools using repetitive motion	ı Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM) ı Stretch breaks/exercises: as needed
Manual Material Handling: Positioning of the Mock-up system and extension poles (approx. 24lbs)	ı Establish Controls (Guideline) [apply 30-50-30 criteria for a non-repetitive lifting task] ¡ Reduce weight ¡ Decrease load ¡ Design work area ¡ Facilitate access to material ¡ Optimum environment ¡ Reduce distance /Provide proper storage facilities ¡ Load storage ¡ Eliminate manual lifting/lowering ¡ Eliminate pushing/pulling – Use lifting aids ¡ Other instructions to staff ı Apply hierarchy of controls approach ı Exposure Assessment: Enter or attach justification to classify exposure scenario as low risk, qualitative exposure assessment (QEA), or requirement to conduct quantitative exposure monitoring (QEM)
Mechanical Material Handling: For positioning of Mock-up system.	ı Apply Guideline: Assess Hazards ı Apply hierarchy of controls approach
Power Equipment: Scissor Lift	ı Qualified operator
DOCUMENTATION REVIEW AUTHORIZATION	

(Approvals are certification of hazards assessment)		
Reviewer/Approver Roles	Signature	Date
Accountable Management (Service Provider, Line, Equipment Owner, or Facility Management)	Caverly, Donald	9/9/2024
Accountable Management (Service Provider, Line, Equipment Owner, or Facility Management)	Keener, Douglas	9/9/2024
IS/IH	Carnahan, Corey	9/9/2024
Other Subject Matter Experts (SMEs)	Hinds, Steven Henry	9/10/2024
Safety Basis Engineer	Green, Michael A	9/9/2024
System Engineer, Accountable Equipment Owner, or Facility Engineer	Burns, Zachary	9/9/2024
Task Leader	Allison Jr, Thomas	9/9/2024
Work Package Concurrence		
Facility Manager		
Operations Supervisor		
Facility Manager Approval To Start Work		
Facility Manager		
Work Start Authorization		
Task Leader		
Work Acknowledged Complete		
Task Leader		
Worker Feedback:		

FOR INFORMATION ONLY. WORK RELEASE AND SYSTEM HOLD POINTS		
TASK DESCRIPTION	RESOURCES	DUR
[Hold Point] - Prior to each mockup practice session coordinate with the Building 7930 Operations Manager to ensure that there are no radioactive materials staged within or will be in transit through rooms 204 and room 302 while the session is in progress.	Project Leader	1

WORK DETAILS - Prerequisites/Precautions			
Hazards	Permits/Controls	Resources	Dur
[Hold Point] - 1) - **Prior to each mockup practice session coordinate with the Building 7930 Operations Manager to ensure that there are no radioactive materials staged within or will be in transit through rooms 204 and room 302 while the session is in progress.**			
Signature: _____		Supervisor Project Leader	1
2) - Coordinate with Facility Management to move the 3rd floor crane from present position to the far North End of 7930.			
		Supervisor Project Leader	1

WORK DETAILS - Directions			
Hazards	Permits/Controls	Resources	Dur
1) - Coordinate with Facility Operations to perform L/T/V on 3rd Floor Crane positioned at the North end of bay.			
		Supervisor Project Leader	1
2) - Position the Tank pit Mock-up equipment in desired area located on the 2nd floor of 7930 near the Truck Bay. *Note: steps 2-4 may be performed out of sequence at Task Lead discretion.*			
		Laborer Millwright Pipefitter Project Leader	1
3) - Use Magnetic portable barrier to block thru traffic from passing by Mock-up and/or under 3rd floor to prevent personnel from passing underneath over-head work.			
		Laborer Project Leader	1
4) - Position approved scissor lift on 3rd floor at a height of 17 feet above Mock-up to simulate the conditions at 7920.			
		Supervisor Laborer Millwright Pipefitter	1
5) - Position Personnel on second floor to assist in the Mock-up practice. Hard hats are required PPE.			
		Supervisor Laborer Millwright Pipefitter Project Leader	1
6) - Practice using Custom extension tools from simulated height. Tools include: Hydraulic rebar cutter, Ratchet, GoPro, J Hook, Threaded attachment, and 2 Grip tools.			
		Millwright Pipefitter	1

7) - After completion of work, coordinate with Facility Operations to remove L/T/V from Overhead Crane and return to service.			
		- Supervisor - Project Leader	1
WORK DETAILS - Closeout			
Hazards	Permits/Controls	Resources	Dur
1) - Return all barriers, lifts and equipment used in the Mock-Up activities to their original locations and ensure are is clean and free of debris.			
		- Supervisor - Laborer - Millwright - Pipefitter - Project Manager	1

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PRE-JOB SAFETY REVIEW GUIDE

ID: 61732

Scope of Work: Review work package/plan to ensure all participants understand the work activity.

Hazards: Review the hazards identified in Job Hazard Evaluation (JHE) / work plan (IOP).

- Since the work package / plan was written: 1) Have conditions changed? 2) Are there new hazards? Refer to Field Notes and Focus Areas.

Hazard Controls / Permits: Review:

- Written permits for the work activity.
- Precautions, step warnings, Hold Points ...
- Personal Protective Equipment (PPE)
- Work instructions for information - e.g., steps where hazards are introduced.
- ORNL subject area requirements - e.g., non-permit hazard controls.

Performing Work:

- Discuss group/individual responsibilities for safe & effective work.
- Follow work instructions & safety procedures.
- Availability/location of materials, tools, etc.
- Any previous experiences / lessons learned?
- Response if work cannot be performed as planned.
- What is the worst thing that could happen?
- Are there *Potential error traps* with the job? → →
- Take a minute before: work start & leaving work area.
- Work Hand-off / Turnover - workers & Task Leader

→ Potential Error Traps:

- Time pressures
- Distractive environment
- High workload
- First time evolution
- First day back
- Vague guidance
- Over confidence
- Imprecise communications
- Work stress

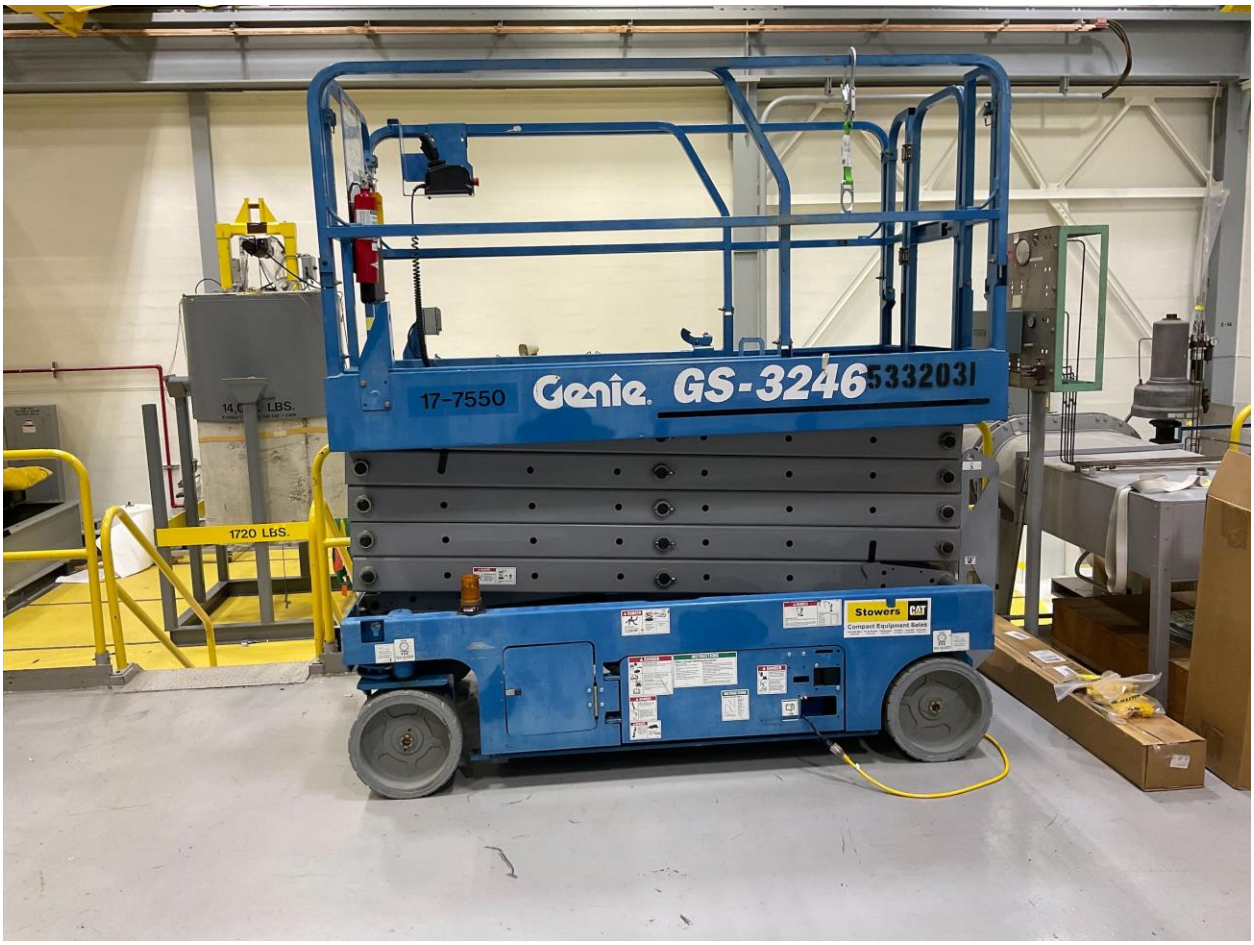
Abnormal Situation Response:

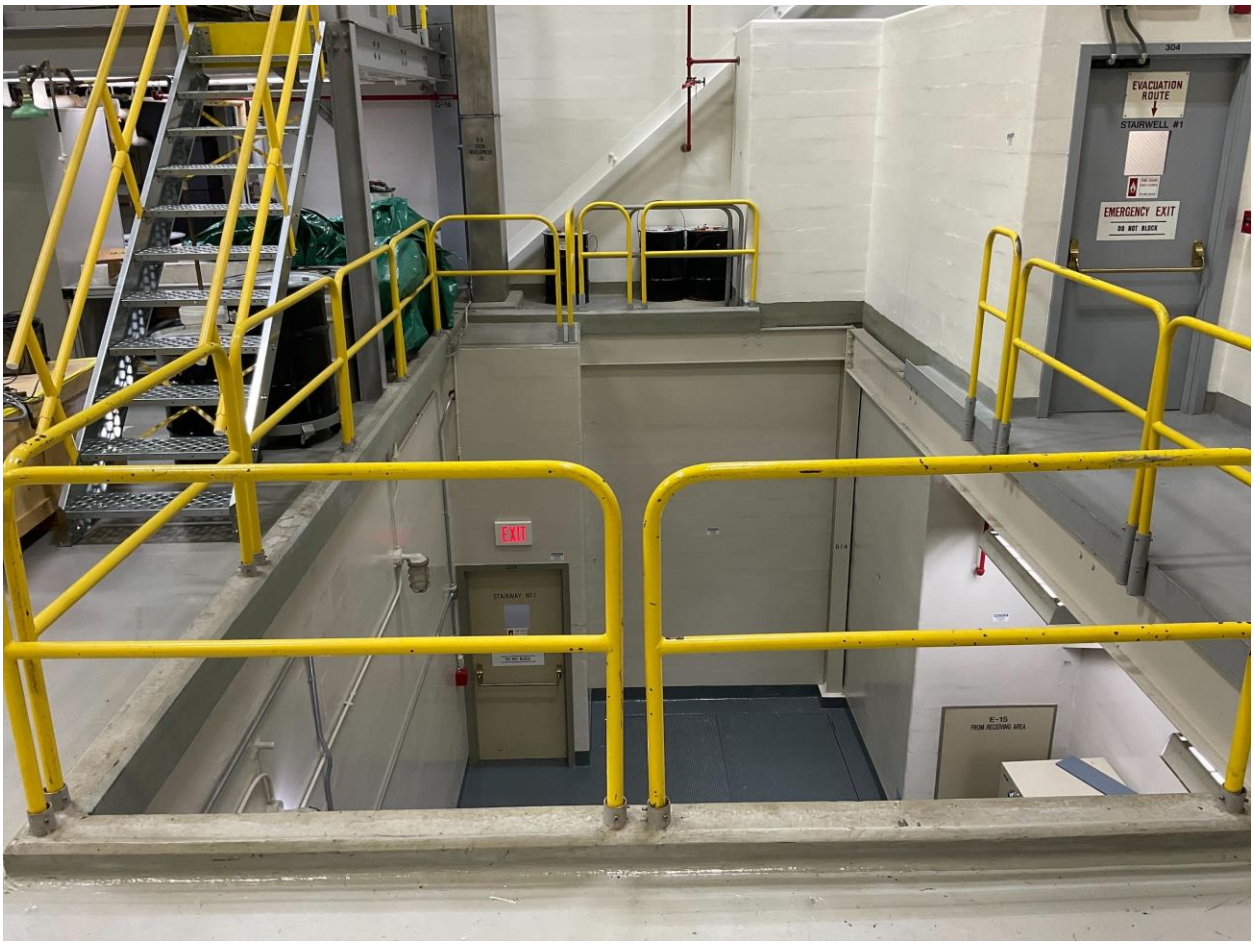
- *Stop Work*: Observe an unsafe act, activity or condition that creates an imminent danger.
- *Emergency Response*: Discuss egress paths or other responses if problems are encountered.

Field Notes and Focus Areas: (Use this area as a work space to record notes related to new hazards identified in the field or changed conditions. Record feedback in work package/plan information systems.)

By signing below, I am indicating that I have been briefed on the potential hazards associated with completing this job.

Signature / Badge	Date	Signature / Badge	Date


17-7550
Genie GS-3246
1720 LBS.
Stowers CAT


304
EVACUATION ROUTE
STAIRWELL #1
EMERGENCY EXIT
DO NOT BLOCK
EXIT
E-15
FROM RECEIVING AREA

QEA 1 of 1	Qualitative Exposure Assessment – Multiple Hazard Form

☐ **No QEA is required based upon a review of the types(s) of hazards associated with this activity/task**

☐ **QEA could not be conducted at the time the RSS/Workplan was reviewed/approved due to inadequate information provided by the PI, Work Planner/Package author on some or all agent(s)/hazard(s).**

List the agent(s) for which a QEA could not be conducted:	**N/A**
Discuss controls incorporated into Work control to assure EA is conducted in the future:	**N/A**

Process/Task	Mock-up for 7920 Tank Pit Repairs at 7930	**Facility #:**	7930	**Room/Lab/Shop #:**	Facility
Work Description	Mock up and practice use of the (7) extension tools, 24' in length prior to use at 7920 tank pit.	**Organization:**	NNFD	**RSS/Work Plan #:**	MWP061732

Agents and Control Information

	Process/Task	REC ID	Hazardous Agent	Quantity Magnitude	Primary Exposure Forms	Exposure Duration	Eng. & Adm. Controls	OEL
1	Ergonomics	N/A	Muscle Strain	Variable	Other	Variable	T, P, W/R	Task Dependant
2	Manual Material Handling	N/A	Ergonomic Strain	Variable	Other	Variable	T, P	Task Dependant
3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Routes of Entry Codes: Inh – Inhalation, P – Penetration, Ing – Ingestion, S – Splash, A – Absorption

Engineering Control Codes: GB – Glovebox, GV – General Ventilation, Hood – Other LEV Hood, I/E – Isolate or Enclosed Hazard, LH – Lab Hood, S – Shielding, W – Wet Methods

Administrative Control Codes: T – Training, L/P – Labeling or Posting, P – Written Procedure/Plan, LT – Limited Stay Time, W/R – Modified Work/Rest Cycle, BEI – Biological Monitoring, MS – Medical Surveillance

	Health Severity Rating	Exposure Rating 1-4	Certainty Rating 1-3	QEA Rating 1-4	Exposure Decision
1	2	1	1	3	3
2	2	2	1	4	4
3	N/A	N/A	N/A	#VALUE!	#VALUE!
4	N/A	N/A	N/A	#VALUE!	#VALUE!
5	N/A	N/A	N/A	#VALUE!	#VALUE!
6	N/A	N/A	N/A	#VALUE!	#VALUE!
7	N/A	N/A	N/A	#VALUE!	#VALUE!

QEA Rating= (Health Severity Rating + Exposure Rating) x Certainty Rating
Exposure Decision: Acceptable (2-7) Uncertain (8-15) Unacceptable (16-24)

QHSP Approver:	Corey Carnahan
Date:	9/6/2024

	Exposure Decision and Follow-up				
	Was Risk Acceptable?	Describe justification for classification	Uncertain & Unacceptable Exposures		
			Follow-up Priority	Monitoring Required?	Reccomendations
1	Yes	Personnel avoid compromising positions or use of excessive force. Taking stretch breaks and diversifing activities, as needed, or to alternate personnel is encouraged. Tools and equipment will be used as intended for the work activities. PPE/accessories will be made available to reduce ergonomic strain. Contact IS/IH for further evaluation	Low	No	N/A
2	Yes	Personnel will apply 30-50-30 criteria for non-repetitive lifting tasks and will use proper lifting techniques. For awkward loads or those exceeding 50 lbs., lifting aids or two-person lifts will be used, where feasible. There is no intended repetitive or production-type two-handed mono-lifting task associated with the work activities, therefore, the TLVs do not apply.	Low	No	N/A

EUSQD Number: EUSQD/REDC/24-107
Revision Number: 0

EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

Part I - Introduction

1. Facility: Radiochemical Engineering Development Center (REDC) Building 7930

2. Subject of evaluation: Mockup and Practicing of Building 7920 Tank Pit Line Replacement in Building 7930 Third Floor Area 302 and Second Floor Area 204

3. Description of the change:
   This evaluation addresses an activity to mockup and practice at Building 7930 for a planned upcoming maintenance activity in one of the Building 7920 hot cell bank tank pits involving the replacement of jumpers lines to a process tank. The mockup and practicing will take place in the third floor area 302 and second floor checking and holding area 204 of Building 7930 through the opening between the two areas. This area was chosen because there is an opening between the two areas with the distance from the third floor area 302 to the floor of the second floor area 204 close to the depth of the Building 7920 hot cell tank pits. A small jig fixture that mocks up the disconnects on top of a process tank and tubing lines will be set up on the concrete floor slab of the checking and holding area 204 and personnel located above at the north end of the opening through the floor of area 302 will practice using long handled tools to work on installing a repair clamp on a disconnect, cutting process lines using a hydraulic rebar cutting head, and using a GoPro camera to view the operations. The long handled tools consist of 20 to 24 ft long aluminum poles with various devices/tools on the bottom end. The tools to be used will be (1) several with gripper fingers on the bottom end and hand levers on the top end for squeezing the fingers closed to grip and handle tubing lines, (2) one with a rebar cutter head on the bottom end with hydraulic tubing out through the top end that will be connected to a hand operated hydraulic pump, (3) one with a straight oriented socket drive on the bottom end connected to a ratchet on the top end, (4) one with a right angle oriented socket drive on the bottom end connected to a ratchet on the top end, (5) one with a battery operated GoPro camera on the bottom end with cables out through the top end that will be connected to a monitor, (6) one with a "J" hook on the bottom end, and (7) one with a threaded stud on the bottom end for holding the repair clamp. The tools weigh up to about 10 to 25 lbs each. The hand operated hydraulic pump is rated for a maximum of 10,000 psig. To add a little extra height, personnel will work off of the existing manlift located in area 302, which will moved next to the opening. This mockup and practice activity is addressed in Work Plan no. MWP061732. The area 204 and area 302 do not normally contain any radioactive materials but may have radioactive materials temporarily staged or in transit through them. As addressed in the work plan, prior to each practice session the activity personnel will coordinate with the Building 7930 Operations Manager to ensure that there will be no radioactive materials staged within or in transit through the area 204 and area 302 during the practice session. In addition access barriers will be placed to prevent unauthorized personnel entry into the area 204. Finally as addressed in the work plan the overhead crane in the third floor area will be moved to far north end of the third floor area and locked out so that there can be no inadvertent contact of the tools with the electrically energized bus bars on the crane bridge.

   DSA Change? Yes___ No_X_

4. Primary safety basis documents:
   ORNL/7930/SAR Rev. 18; ORNL/7930/TSR Rev. 12, Change No. 1; and ORNL/NNFD/SSAR Rev. 20.

Part II - Expert Determination

1. Relative to the documented safety analysis (DSA), is it readily apparent, based on expert knowledge, training, and experience, that the proposed change **does not**:
   a. Increase the probability or consequences of an accident described in the DSA?

b. Directly or indirectly increase the probability of failure or consequence of a malfunction of equipment important to safety described in the DSA?
c. Create the possibility of an accident of a different type than previously evaluated in the DSA?
d. Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA?

Yes X No ___

2. If the conclusion is Yes, provide a brief rationale why the change is not a USQ. Otherwise, prepare a standard USQD.
This activity itself will not involve any radioactive materials or other unusual hazards/energy sources that would require further analysis in the hazard and accident analysis of the Building 7930 Safety Analysis Report (SAR). All of the hazards/energy sources associated with this activity are standard industrial type hazards/energy sources. Also the hazards/energy sources (potential energy hazard associated with the long handled tools if dropped, pressurized fluid hazard associated with hand operated hydraulic pump, hydraulic lines, and cutter head) are of a type and magnitude already existing for the building areas 204 and 302 and will not have impact on any other hazards/energy sources or structures/ systems, and components outside of the building areas 204 and 302. The heaviest tool ways up to about 25 pounds, and if dropped would not cause any significant damage to the building area 204 concrete floor slab or steel hatch cover and thus would not affect any of the building areas/rooms underneath area 204. Finally, as addressed in the work plan, there will be no radioactive materials staged within or in transit through building areas 204 and 302 during the practice sessions. Thus this activity will have no impact on any of the radioactive material hazards as evaluated in the hazard and accident analysis of the Building 7930 SAR.

Part III - Conclusion and Approval

Based on this determination, the proposed change does Not represent a USQ.

MA — 9-5-2024
Expert USQD Preparer - M. A. Green — Date

for R. Weaver — 9-5-24
REDC Facility Manager - R. J. Weaver — Date