Work scope details:

Title:
Line Repairs at Tank Pit 2 and Tank Pit 6

Work Scope Summary:
This work package involves addressing hazards and implementing controls to perform line repairs at Tank Pit 2 and Tank Pit 6 located in the LAA at Building 7920. The scope includes identifying leaking lines, conducting leak testing post-repair with the help of 7920 Operations personnel, and managing the movement of Tank Pit shield blocks in compliance with specified guidelines and forms.

Key Work Scope Components:
- Identification of leaking lines in Tank Pit 2 and Tank Pit 6
- Performing line repairs in the identified Tank Pits
- Conducting leak testing after repairs with the assistance of 7920 Operations personnel
- Movement and management of Tank Pit shield blocks
- Compliance with NNFD-7920-SR-200 Appendix V and ORNL form-543

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference Link
Assumption Leak Detection Pits Contain Only Intrusion Water Represents A Positive Unreviewed Safety Question	On June 26, 2013, the Plant Review Committee declared a potential inadequacy of the documented safety analysis based on new information that a waste leak to a leak detection pit is credible and could pose a significant facility worker hazard. The safety basis assumed that leak detection pits contain intrusion water, not tank waste, and no waste transfer controls are applied. This assumption was non-conservative given the failure of one barrier (the AY-102 primary tank).	Ensure criteria used to screen out potential hazards from a safety basis document have a strong regulatory basis. Formally document decisions to screen out potential hazards in hazard evaluation reports to ensure the decision is known and available for review. Use approved analysis processes when discussing potential hazards for inclusion or exclusion in a safety basis document.	Link
Robotic Inspection of 241-AY-102 Leak Detection Pit Drain Line Piping	Materials of construction that are representative of what will be encountered in the actual field work should always be used during testing/mockup activities. PVC pipe was used instead of carbon steel pipe for demonstration of a robotic pipe crawler, driven by cost and schedule, resulting in wheel traction issues during testing. These issues took additional time to resolve prior to field deployment.	Use materials representative of actual field conditions during testing/mockup activities to avoid issues during deployment.	Link

High-level CAAM alarm in Building 7920	A high-level CAAM alarm in the transfer area of Building 7920 at Oak Ridge National Laboratory automatically activated the building evacuation system, highlighting issues in emergency management and hazardous screening, especially concerning co-located hazardous chemical containers. The event led to corrective actions regarding hazard identification and emergency procedures.	Improve emergency management and hazardous screening processes, especially concerning co-located hazardous chemical containers.	Link
Safety inspection at Building 7920 of ORNL's REDC	A safety inspection identified weaknesses and deficiencies in safety analyses and procedural controls—particularly relating to off-gas ventilation systems, hazard controls for radiological/material exposures, and the technical adequacy of surveillance testing, including HEPA filters and their ability to function in fire events.	Address deficiencies in safety analyses and procedural controls, particularly in off-gas ventilation systems and hazard controls for radiological/material exposures.	Link
Review of laboratory emergency protocols	A review mentions the requirement to report all accidents, including spills, line leaks, and near misses, to Indiana University Environmental Health & Safety. Instructions cover response to fires, chemical incidents, and leak testing.	Ensure comprehensive reporting and response protocols for accidents, including spills, line leaks, and near misses.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Leak of hazardous materials from tank pits	Not addressed	Implement leak detection systems and regular inspections for tank pits	ChemEngOnline, TheInscriberMag, IPL	Link
Inadequate material selection for repairs	Not addressed	Develop procedures for material selection and emergency response plans	OSHA, CCOHS, OSHA	Link

Emergency management issues	Not addressed	Develop and implement comprehensive emergency management plans	OSHA, CDC, FEMA	Link
Deficiencies in safety analyses and procedural controls	Not addressed	Conduct regular safety analyses and update procedural controls	Weblio, Weblio, Weblio	Link

Failure mode analysis:

Current control	Failure mode of the control	Effect of Failure	Cause of Failure	Recommended action
Written permits for the work activity	Permit not obtained or expired	Unauthorized work leading to safety hazards	Lack of awareness or oversight	Implement a tracking system for permit status and renewals
Personal Protective Equipment (PPE)	Inadequate or improper use of PPE	Increased risk of injury or exposure	Insufficient training or availability	Conduct regular PPE training and audits for compliance
Work instructions for information	Instructions not followed or misunderstood	Incorrect procedures leading to accidents	Poor communication or unclear instructions	Enhance clarity of instructions and conduct pre-job briefings
Hoisting and Rigging inspections	Missed or incomplete inspections	Equipment failure causing accidents	Oversight or lack of resources	Schedule regular inspections and maintain a checklist
Radiological Work Permit (RWP)	RWP not adhered to	Radiation exposure to personnel	Non-compliance or lack of monitoring	Reinforce RWP adherence through training and monitoring
Guardrails around pit openings	Guardrails not installed or maintained	Fall hazards leading to injury	Negligence or resource constraints	Regularly inspect and maintain guardrails
Dosimetry Monitoring Requirements	Monitoring devices not used or malfunctioning	Unnoticed radiation exposure	Equipment failure or non-compliance	Ensure regular calibration and compliance checks
Pre-job brief using NNFD-FRM-058	Brief not conducted or incomplete	Unidentified hazards leading to incidents	Time constraints or lack of participation	Mandate comprehensive pre-job briefings with all stakeholders