Work scope details:

Title: BL1B Ladder Modification

Work Scope Summary: - The task involves modifying the detector entry ladder by cutting off approximately 1.5-2 inches from its bottom to meet specific requirements or constraints.

Key Work Scope Components: - Measurement of the ladder to determine the exact amount to be cut. - Cutting 1.5-2 inches from the bottom of the ladder. - Ensuring the ladder remains stable and safe for use after modification. - Inspecting the modified ladder for compliance with safety standards. - Cleaning up and disposing of any debris or materials resulting from the modification.

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference link
Performing Pre-use Inspection Important for Ladder Users	A Field Safety Assurance Representative identified damaged fiberglass ladders during a routine safety walk down at the Department of Energy Waste Treatment Plant Low Activity Waste Facility. The ladders were tagged as "Danger Damaged Defective Tool" and removed from service.	It is crucial to perform pre-use inspections, as ladders may have been damaged since the last inspection. A damaged ladder can collapse and cause injury. Take ladder inspections seriously.	Link
Fixed Ladder Failure Results in Near Miss to Occupational Injury	On May 21, 2011, a worker fell from a fixed ladder while performing neutron detector interlock checks. The ladder rails were not attached to a structural component, leading to failure when the worker lost balance and grabbed the rail.	Ensure ladder rails are properly attached to structural components to prevent failure. Restrict access to areas with unsafe ladders and develop corrective actions.	Link
OSHA Reports Multiple Fatal Incidents Involving Ladders	In March 2024, OSHA highlighted fatal incidents involving ladders due to improper setup or selection, emphasizing the importance of compliance inspection and safety practices.	Proper ladder setup and selection are critical to prevent accidents. Compliance inspections and safety practices must be prioritized.	Link
WorkSafe Queensland Investigates Ladder Falls	In early 2024, WorkSafe Queensland investigated serious incidents where workers fell from ladders at construction sites, resulting in severe injuries. Investigations focused on ladder instability and improper positioning.	Regulatory compliance and safety inspections are essential to prevent ladder falls. Ensure ladders are stable and properly positioned.	Link

Ladder Accidents Impact on Workers	Ladder accidents continue to cause over 300 deaths and 500,000 injuries annually in the U.S., often due to improper modification, poor maintenance, and unsafe usage.	Proper maintenance, compliance inspection, and safe usage practices are vital to reduce ladder-related accidents.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Mechanical hazards during cutting	Not addressed	Ensure guards are in place, functional safety interlocking devices, warning signs, safe-holding safeguarding, use of hand-feeding tools, and adherence to manufacturer's operation manual	N/A	Link
Ladder instability post-modification	Not addressed	Develop comprehensive ladder safety plans, ensure regular inspections, and provide training on ladder modifications	Weblio	Link
Improper ladder inspection	Not addressed	Implement regular ladder inspections and maintenance, provide access to ladder safety tools and information	WS Safety	Link
Improper attachment of ladder rails	Not addressed	Educate on proper attachment techniques, use safety rails to increase stability	HSE Blog	Link
Improper setup or selection of ladder	Not addressed	Provide guidelines for proper ladder selection and setup, conduct training sessions	CPWR Construction Solutions	Link

Debris from cutting process	Not addressed	Implement debris management strategies, use appropriate PPE, and ensure regular maintenance of cutting tools	ISHN	Link
Noise exposure during cutting	Not addressed	Use quieter machines, isolate noise sources, limit exposure, and provide effective hearing protection	OSHA	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 violations	Miscommunication or oversight in permit management	Implement a robust permit tracking system and regular audits
Precautions, step warnings, Hold Points	Steps not followed or warnings ignored	Increased risk of accidents or injuries	Human error or lack of training	Conduct regular training and enforce strict adherence to procedures
Personal Protective Equipment (PPE)	PPE not worn or inadequate	Increased risk of injury	Lack of PPE availability or awareness	Ensure PPE availability and conduct mandatory PPE checks before work
Work instructions for information	Instructions not followed or misunderstood	Incorrect execution of tasks leading to unsafe conditions	Vague instructions or lack of clarity	Revise instructions for clarity and conduct pre-job briefings
ORNL subject area requirements	Non-compliance with specific requirements	Regulatory non-compliance and potential fines	Lack of awareness or understanding of requirements	Regular training on ORNL requirements and compliance checks
Discuss group/individual responsibilities	Roles not clearly defined or communicated	Confusion and potential safety risks	Poor communication or lack of leadership	Clearly define roles and responsibilities in pre-job meetings
Follow work instructions & safety procedures	Deviations from procedures	Increased likelihood of accidents	Complacency or lack of supervision	Implement a system of checks and balances to ensure compliance

Availability/location of materials, tools	Tools/materials not available or misplaced	Delays and potential safety risks	Poor inventory management	Implement a tool/materials management system
Previous experiences / lessons learned	Lessons not documented or shared	Repeated mistakes leading to safety incidents	Lack of a feedback loop	Establish a lessons learned database and review regularly
Response if work cannot be performed as planned	Inadequate contingency planning	Increased risk of accidents	Lack of foresight or planning	Develop contingency plans and conduct scenario planning exercises
Hearing protection (plugs or muffs)	Hearing protection not used	Hearing damage due to noise exposure	Lack of awareness or availability	Conduct noise assessments and enforce hearing protection use
Ensure guards are in place	Guards missing or improperly installed	Increased risk of injury from machinery	Negligence or lack of maintenance	Regular inspections and maintenance of guards
Workers not wearing loose clothing	Loose clothing worn near machinery	Risk of entanglement and injury	Lack of awareness or enforcement	Enforce dress code and conduct regular safety audits
Follow manufacturer's operation manual	Manual not followed	Equipment misuse leading to accidents	Lack of training or oversight	Provide training on equipment manuals and conduct regular checks
Evaluation of work station/posture	Poor ergonomic conditions	Increased risk of musculoskeletal disorders	Lack of ergonomic assessment	Conduct ergonomic assessments and provide ergonomic solutions