Work scope details:

Title: BL1B-VAC REPAIR 2ND Shutter

Work Scope Summary: - The work involves the repair and reinstallation of the second shutter in the BL1B-VAC system. This includes removing existing components, conducting safety checks, performing critical lifts, installing new parts, and ensuring proper alignment and functionality of the shutter system.

Key Work Scope Components: - Remove shielding and t-zero chopper - Conduct radiation and alignment checks - Disconnect secondary shutter wiring - Perform critical lift to remove the 2nd shutter - Drill holes and install vacuum caps - Conduct leak test - Install and align repair shutter - Reinstall t-zero chopper and shielding

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference link
Critical Lift Results in Damage to Equipment	On March 7, 2024, during critical lift activities at Sandia National Laboratories, a fastener was not removed, causing damage to equipment. No injuries occurred, and work was stopped for safety evaluation.	Ensure all fasteners are removed before lifting. Conduct thorough checks and briefings to prevent such incidents.	Link
Hydraulic Oil Leak in Geomechanics Lab	On April 15, 2009, hydraulic oil leaked from an out-of-service lifting device at the Geomechanics Lab. The device was still connected to the test frame hydraulics, causing minor oil drips.	Disconnect out-of-service equipment from active systems to prevent leaks.	No URL provided
Inadequate Leak Testing of Isolation Valves	A thorough pre-job briefing and complete work instructions help ensure worker comprehension and prevent job performance errors for critical infrequently performed tasks.	Conduct thorough pre-job briefings and ensure complete work instructions are provided and understood.	Link
Scissor Lift Accident at Port Everglades	On March 15, a scissor lift carrying three workers fell on its side during maintenance, resulting in two fatalities and one critical injury.	Ensure proper safety measures and equipment checks are in place before using lifts.	Link
Near Miss with Crane at Guatemalan Port	In November 2018, a miscalculation during counterweight removal nearly toppled a crane lift. A worker narrowly avoided a fatality by hooking his legs to safety.	Use proper calculations and safety harnesses when working at heights.	Link

Multiple Crane Collapses	Multiple crane collapses have occurred due to improper removal of critical components during assembly or dismantling, especially with lifting equipment or counterweights. Failures occurred due to not following procedures and premature removal of structural parts.	Follow proper procedures and ensure critical components are not prematurely removed during crane assembly or dismantling.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Critical Lift Failure	Lack of detailed hazard identification and risk assessment for lifting and rigging operations	Implement a comprehensive Lifting and Rigging Operations HIRA (Hazard Identification and Risk Assessment)	HSE Study Guide	Link
Hydraulic Oil Leak	No specific controls for hydraulic oil leaks	Develop procedures for regular inspection and maintenance of hydraulic systems to prevent leaks	Weblio	Link
Inadequate Leak Testing	Lack of systematic process for identifying hazards in leak testing	Implement hydrotesting HIRA and risk assessment protocols	Safety Notes	Link
Scissor Lift Accident	Insufficient controls for scissor lift operations	Establish safety rules and training for scissor lift operations to prevent accidents	OSHA	Link
Crane Collapse	Lack of specific controls for crane operations	Adhere to crane load capacity and implement safety measures to prevent crane collapse	OSHA	Link
Time Pressures and Distractive Environment	No controls for managing time pressures and distractions	Implement hierarchy of controls to manage time pressures and distractions in the workplace	Wikipedia	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 permit review or oversight	Implement a permit tracking system and regular audits
Personal Protective Equipment (PPE)	PPE not used or inadequate	Increased risk of injury	Lack of PPE availability or awareness	Conduct PPE training and ensure availability
Work instructions & safety procedures	Instructions not followed	Unsafe work practices leading to accidents	Inadequate training or supervision	Enhance training programs and supervision
Radiological posting, entry control & egress requirements	Non-compliance with radiological controls	Radiation exposure	Lack of awareness or monitoring	Regular training and monitoring by RCT
Fall Protection: handrails system used	Handrails not installed or used	Fall from height	Poor installation or lack of use	Regular inspections and training on fall protection
Manual Material Handling	Improper lifting techniques	Musculoskeletal injuries	Lack of training or ergonomic design	Provide ergonomic training and lifting aids
Emergency Response	Inadequate emergency procedures	Delayed response to emergencies	Lack of drills or unclear procedures	Conduct regular emergency drills and update procedures
Hoisting and Rigging	Equipment failure or misuse	Dropped loads causing injury or damage	Poor maintenance or operator error	Regular equipment inspections and operator training
Radiological Work Permit	Permit not adhered to	Radiation exposure	Lack of compliance or understanding	Reinforce permit requirements through training
Electrical Work Qualification	Unqualified personnel performing electrical work	Electrical hazards	Inadequate qualification checks	Implement strict qualification verification processes