

Work scope details:

Title: BL12 N-Helix Installation

Work Scope Summary: The work involves the removal of existing components and the installation of new N-Helix components in Building 8700. The task requires careful handling of materials and equipment, ensuring proper alignment and radiological safety throughout the process.

Key Work Scope Components:

- Removal of existing N-Helix components
- Installation of new N-Helix components
- Radiological survey by Radiological Control Technician (RCT)
- Verification of alignment by Survey and Alignment team
- Notification to beamline upon completion of work

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference Link
Equipment Installation Incident at ORNL	During the installation of a complex piece of equipment, a technician sustained an injury due to improper lifting techniques.	Emphasized the importance of ergonomic training and the need for team lifting protocols for heavy components.	N/A
Radiological Contamination Event	A contamination incident occurred when proper radiological controls were not followed during equipment removal, leading to a significant cleanup effort.	Highlighted the necessity of strict adherence to radiological safety protocols and the importance of pre-job briefings.	N/A
Tool Failure During Maintenance	A critical tool failed during the installation process, causing a delay and potential safety hazard.	Stressed the importance of regular tool inspections and maintenance checks before use.	N/A
Overhead Work Incident	A worker was injured when tools fell from an overhead workspace due to inadequate securing measures.	Reinforced the need for proper securing of tools and materials when working at heights.	N/A
Miscommunication During Equipment Setup	A miscommunication regarding equipment setup led to a near-miss incident.	Underlined the importance of clear communication and documentation of procedures among team members.	N/A

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
Manual Material Handling	Not addressed	Implement team lifting protocols and ergonomic training for all personnel involved.	N/A	N/A
Radiological Exposure	Inadequate survey frequency	Ensure RCT conducts surveys before, during, and after installation work.	N/A	N/A
Tool Operation	Not addressed	Conduct a pre-use inspection of all tools and provide training on proper usage.	N/A	N/A
Overhead Work	Not addressed	Require the use of tool lanyards and establish a secure area below overhead work zones.	N/A	N/A
Electrical Hazards	Not addressed	Ensure all electrical tools are inspected and grounded; provide training on electrical safety.	N/A	N/A
Confined Spaces	Not addressed	Identify any confined spaces and ensure proper ventilation and monitoring during work.	N/A	N/A
Environmental Conditions	Not addressed	Monitor temperature extremes and provide appropriate PPE for heat or cold exposure.	N/A	N/A
Communication Failures	Inadequate communication protocols	Establish a clear communication plan and conduct regular briefings before work.	N/A	N/A
Time Pressures	Not addressed	Allow adequate time for all tasks and discourage rushing to prevent errors.	N/A	N/A
Vague Guidance	Not addressed	Provide detailed work instructions and ensure all team members understand their roles.	N/A	N/A
High Workload	Not addressed	Assess workload and redistribute tasks to prevent worker fatigue and errors.	N/A	N/A

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
First-Time Tasks	Not addressed	Pair inexperienced workers with mentors for guidance during initial tasks.	N/A	N/A

Failure mode analysis:

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
RCT Survey	Survey not conducted	Potential radiological exposure	Lack of scheduling or oversight	Ensure RCT is scheduled and confirmed before work begins.
Team Lifting Protocol	Team lifting not utilized	Increased risk of musculoskeletal injuries	Lack of awareness or training	Conduct mandatory ergonomic training sessions for all workers.
Tool Inspection	Tools not inspected	Tool failure during operation	Inadequate maintenance schedule	Implement a daily checklist for tool inspections before use.
Communication Plan	Miscommunication occurs	Increased risk of errors and accidents	Vague instructions	Establish a clear communication protocol and conduct pre-job briefings.
PPE Requirements	PPE not worn	Increased risk of injury	Overconfidence or lack of enforcement	Conduct regular PPE audits and enforce compliance strictly.

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
Emergency Response Plan	Plan not followed	Delayed response to incidents	Lack of training or drills	Schedule regular emergency response drills and training sessions.
Work Instructions	Instructions not followed	Increased risk of procedural errors	Lack of clarity in instructions	Review and revise work instructions to ensure clarity and detail.
Tool Availability	Tools not available	Delays in work and increased frustration	Poor inventory management	Maintain an inventory management system to ensure tool availability.
Training Verification	Inadequate training	Increased risk of accidents	Lack of tracking for training completion	Implement a tracking system for training completion and competency verification.
Work Area Inspection	Work area not inspected	Presence of hazards not identified	Lack of pre-job inspection	Conduct a thorough pre-job inspection to identify and mitigate hazards.
Equipment Failure	Equipment not maintained	Potential for accidents or delays	Inadequate maintenance schedule	Establish a regular maintenance schedule for all equipment used.
Radiological Controls	Controls not followed	Potential contamination	Lack of awareness of protocols	Conduct regular training on radiological safety protocols.