

**Work scope details:**

**Title:** Removal and Installation of Roof Panel at BL-15

**Work Scope Summary:** This work plan involves the removal of the BL-15 roof block, lowering equipment, and subsequently installing the roof block back in place. The operation requires careful handling of materials and adherence to safety protocols due to the elevated work environment and the use of hoisting equipment.

**Key Work Scope Components:**

- Removal of BL-15 roof block
- Lowering of equipment using hoisting and rigging
- Installation of roof block
- Use of personal protective equipment (PPE) such as hard hats and safety shoes
- Implementation of fall protection measures

**Relevant previous events and lessons learned:**

Event Title	Event Summary	Lessons Learned	Reference Link
Roof Collapse Incident at XYZ Facility	During maintenance, a roof panel collapsed due to improper rigging, resulting in injuries.	Ensure all rigging is inspected and verified before use. Training on rigging techniques is essential.	<a href="#">N/A</a>
Fall from Height at ABC Site	A worker fell from an unprotected edge while installing equipment on a roof.	Implement strict fall protection measures and ensure all workers are trained on fall hazards.	<a href="#">N/A</a>
Equipment Lowering Failure	A hoisted piece of equipment slipped due to inadequate securing, causing damage and near misses.	Always double-check securing mechanisms and use appropriate rigging techniques.	<a href="#">N/A</a>
Overhead Work Injury	A worker was struck by a falling tool while working at heights.	Use tool lanyards and ensure the work area is clear of unnecessary personnel.	<a href="#">N/A</a>
Radiological Exposure Incident	A worker was exposed to radiological materials during maintenance due to inadequate shielding.	Ensure proper radiological work permits are in place and that workers are trained on exposure risks.	<a href="#">N/A</a>

**Missing Hazards:**

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
Falling Objects	Not addressed	Implement tool lanyards and establish exclusion zones below work areas.	N/A	N/A

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
Inadequate Fall Protection	Not addressed	Install guardrails and ensure all workers are trained in fall protection measures.	N/A	N/A
Equipment Overload	Not addressed	Conduct weight checks and ensure all lifting equipment is rated for the load.	N/A	N/A
Radiological Contamination	Inadequate	Ensure a Radiological Work Permit is obtained and that contamination control measures are in place.	N/A	N/A
Poor Visibility	Not addressed	Ensure adequate lighting is provided in the work area, especially during low-light conditions.	N/A	N/A
Tool Malfunction	Not addressed	Regularly inspect and maintain tools and equipment before use.	N/A	N/A
Communication Failures	Inadequate	Establish clear communication protocols and use radios for coordination during lifting operations.	N/A	N/A
Time Pressure	Not addressed	Schedule adequate time for each task to minimize rush and errors.	N/A	N/A
Distraction	Not addressed	Conduct a pre-job briefing to ensure all workers are aware of their responsibilities and the work plan.	N/A	N/A
Lack of Training	Not addressed	Ensure all personnel are trained in hoisting and rigging procedures and fall protection.	N/A	N/A
Confined Space Risks	Not addressed	Assess the work area for confined space hazards and implement necessary controls.	N/A	N/A

## Failure mode analysis:

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
Radiological Work Permit	Permit not obtained or expired	Potential exposure to radiation	Lack of oversight	Ensure permits are reviewed and renewed before work begins.
PPE Requirements	PPE not used or inadequate	Increased risk of injury	Lack of enforcement	Conduct regular PPE audits and training refreshers.
Pre-Lift Inspection	Inspection not performed	Equipment failure during lift	Poor communication	Implement a checklist and assign responsibility for inspections.
Fall Protection Training	Training not completed	Increased risk of falls	Lack of tracking	Maintain a training log and schedule regular refreshers.
Communication Protocols	Poor communication during lifts	Increased risk of accidents	Inadequate procedures	Establish clear communication protocols and conduct drills.
Tool Inspection	Tools not inspected before use	Tool failure	Inadequate maintenance	Implement a pre-use inspection checklist for tools.
Emergency Response Plan	Plan not communicated	Delayed response in emergencies	Lack of training	Conduct regular emergency drills and reviews of the plan.
Weight Verification	Weight not verified	Overloading equipment	Assumptions made	Require weight verification as part of the pre-lift checklist.

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
Work Area Inspection	Work area not inspected	Unidentified hazards	Rushed setup	Conduct thorough inspections and document findings.
Equipment Availability	Equipment not available	Delays in work	Poor planning	Ensure all necessary equipment is reserved and available before work starts.
Training and Competency Verification	Training not verified	Incompetent personnel	Lack of documentation	Implement a competency verification process for all personnel involved.
Tool Drop Zone Control	Load drop zone not controlled	Injury to personnel below	Lack of awareness	Establish and enforce exclusion zones during lifting operations.

This risk assessment report provides a comprehensive overview of the potential hazards associated with the work plan for removing and installing the roof panel at BL-15, along with actionable recommendations to mitigate these hazards effectively.