Work scope details:

Title: MPS Full System Checkout

Work Scope Summary: The MPS Full System Checkout involves a comprehensive evaluation of the MPS system, including the front end cadged area, which requires adherence to specific radiation safety protocols under a Radiological Work Permit (RWP). This work is critical to ensure the system operates safely and effectively while mitigating any potential radiological hazards.

Key Work Scope Components:

• Full system checkout of the MPS.

• Accessing the front end cadged area under RWP conditions.

• Use of specialized tools and equipment for system evaluation.

• Compliance with radiation safety protocols.

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference Link
Radiation Exposure Incident at Facility X	An employee inadvertently entered a high radiation area without proper monitoring, resulting in exposure.	Importance of strict adherence to RWP protocols and ensuring all personnel are trained on radiation safety.	NRC Event Notification
Equipment Failure During System Checkout	A critical component failed during a system checkout, causing a temporary shutdown and potential exposure.	Regular maintenance and checks of equipment are essential to prevent failures during critical operations.	OSHA Equipment Safety Guidelines
Contamination Incident in Radiological Area	A worker contaminated their PPE while working in a radiological area, leading to a decontamination effort.	Reinforcement of PPE protocols and regular decontamination training is necessary for personnel working in radiological environments.	[N/A]
Improper Tool Usage Leading to Injury	An employee was injured due to improper use of tools during maintenance activities.	Emphasizing the importance of training on tool usage and adherence to safety protocols can prevent injuries.	OSHA Tool Safety
Near Miss During Equipment Installation	A near miss occurred when a worker was not properly secured while working at height during equipment installation.	Implementing strict fall protection measures and ensuring all workers are trained on safety protocols can mitigate risks.	OSHA Fall Protection

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
Radiological Exposure	Not addressed	Ensure all personnel are trained on RWP and radiation safety protocols. Implement continuous radiation monitoring.	[N/A]	[N/A]
Equipment Failure	Not addressed	Schedule regular maintenance checks and ensure backup systems are in place.	[N/A]	[N/A]
PPE Contamination	Inadequate	Provide clear instructions for PPE usage and decontamination procedures. Conduct regular training sessions.	[N/A]	[N/A]
Tool Safety	Not addressed	Develop a tool safety checklist and provide training on proper tool usage.	[N/A]	[N/A]
Fall Hazards	Not addressed	Implement fall protection measures and ensure all personnel are trained on working at heights.	[N/A]	[N/A]
Confined Space Entry	Not addressed	Conduct a confined space assessment and ensure proper ventilation and monitoring are in place.	[N/A]	[N/A]
Time Pressures	Inadequate	Establish realistic timelines for tasks and ensure adequate staffing to reduce pressure.	[N/A]	[N/A]
Distractive Environment	Not addressed	Implement a distraction-free work zone policy and conduct regular safety briefings.	[N/A]	[N/A]
High Workload	Inadequate	Monitor workloads and adjust assignments to ensure personnel are not overwhelmed.	[N/A]	[N/A]
Vague Guidance	Not addressed	Provide clear, detailed work instructions and ensure all personnel understand their roles.	[N/A]	[N/A]
Overconfidence	Not addressed	Conduct regular safety reminders and training to address overconfidence in abilities.	[N/A]	[N/A]

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference Link	SBMS Link
Communication Issues	Inadequate	Establish clear communication protocols and conduct regular check-ins during work activities.	[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 (RWP)	Permit not obtained or expired	Potential exposure to radiation	Lack of awareness or oversight	Implement a system for tracking permit status and reminders for renewals.
PPE Requirements	PPE not used or inadequate	Increased risk of contamination or exposure	Lack of training or c omplacency	Conduct mandatory PPE training and audits to ensure compliance.
Work Instructions	Instructions unclear or incomplete	Increased risk of errors during work	Poor commu nication	Revise work instructions to ensure clarity and c ompleteness ; involve workers in the review process.
Communication Protocols	Ineffective communication among team members	Increased risk of accidents or errors	Lack of established protocols	Implement regular safety briefings and establish clear comm unication channels.

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
Emergency Response Procedures	Emergency procedures not followed	Increased risk during emergencies	Lack of training or drills	Conduct regular emergency response drills and training sessions.
Tool Availability	Tools not available or malfunctioning	Delays in work and potential safety risks	Poor inventory management	Establish a tool inventory system and schedule regular maintenance checks.
Training and Competency Verification	Inadequate training for personnel	Increased risk of accidents	Lack of training programs	Develop comprehensive training programs and ensure regular competency assessments.
Work Area Inspections	Inspections not conducted regularly	Increased risk of hazards going unnoticed	Lack of accountability	Schedule regular inspections and assign responsibility for hazard identification.
Task Planning	Tasks not adequately planned	Increased risk of errors and accidents	Poor planning processes	Implement a task planning checklist to ensure all aspects are considered before work begins.
Hazard Communication	Hazards not communicated effectively	Increased risk of accidents	Lack of established protocols	Develop a hazard communication plan and ensure all personnel are trained on it.

Current Control	Failure Mode of the Control	Effect of Failure	Cause of Failure	Recommended Action
Equipment Checks	Equipment not checked before use	Increased risk of equipment failure	Lack of routine checks	Implement a pre-use equipment checklist and ensure compliance.
Fatigue Management	Workers not monitored for fatigue	Increased risk of errors	Lack of monitoring systems	Establish a fatigue management program and monitor worker hours.

This risk assessment report provides a detailed analysis of the potential hazards associated with the MPS Full System Checkout work plan, identifies relevant historical safety events, and outlines specific mitigation recommendations to enhance safety and compliance.