Work scope details:

Title:** PREAPPROVED WORK PLAN FOR THE STEAM PRODUCTION SYSTEM

Work Scope Summary:
The objective of this work package is to conduct routine maintenance activities on the Steam Production Systems and related equipment. These activities include troubleshooting, basic parts replacement, and repairs that do not require additional written instructions, though task leader direction may be necessary. The work encompasses various tasks performed by millwrights, pipefitters, welders, electricians, instrumentation and control technicians, utility mechanics, laborers, boilermakers, carpenters, and insulators.

Key Work Scope Components:
- Millwright tasks: pump maintenance, mechanical repairs, filter replacements, preventive maintenance. - Pipefitter and welding tasks: piping repairs, valve replacements, pressure relief valve installations, welding, preventive maintenance. - Electrician tasks: voltage readings, breaker operations, electrical repairs, panel installations, preventive maintenance. - I&C tasks: instrument maintenance, diagnostics, calibration, control wiring installations, preventive maintenance. - Utility mechanic tasks: concrete repairs, floor leveling, masonry work, preventive maintenance. - Laborer tasks: material movement, cleanup, equipment moving, waste collection, preventive maintenance. - Boilermaker tasks: pressure vessel maintenance, gasket installations, tube cleaning, preventive maintenance. - Carpenter tasks: scaffolding construction, containment structures, work platforms, preventive maintenance. - Insulator tasks: insulation replacement and abatement, prefabrication, field installations, disposal of insulating materials.

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Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference link
Repair Task Performed Without Lockout/Tagout of All Energy	A troubleshooting task to find an air leak on a piece of process equipment proceeded past the intended scope of the work and resulted in exposing the maintenance technicians to an uncontrolled hazardous energy source - the pressurized air.	Ensure all energy sources are properly locked out/tagged out before proceeding with maintenance tasks to prevent exposure to hazardous energy.	Link
Preventative Maintenance Basis Reviews Can Prevent Costly Equipment Failures and Unscheduled Down Time	Periodically review original preventative maintenance (PM) bases to ensure PMs are still valid and that the proper level of maintenance is being performed to maintain equipment reliability.	Regular reviews of PM bases are crucial to maintaining equipment reliability and preventing costly failures and downtime.	Link

Employee Called to Work on Vacuum Leak on VTR-26	Employee was called into work on Friday to help with a vacuum leak on VTR-26. Tool would not pump down. Maintenance team had been troubleshooting the vacuum for past 4 or 5 days, aware of the status of the tool. Regular corrective maintenance task. Employee knew they needed step stool/ladder to access area where work was being completed. Area was blocked off to prevent other worker access, and couldn't bump while work was being completed. Tool is open in the chase. Congested area.	Ensure proper access and safety measures are in place when working in congested areas. Regular communication about tool status is essential for effective troubleshooting.	N/A

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Ergonomic Conditions	Not addressed	Conduct ergonomic assessments and implement workstation adjustments, provide ergonomic training, and encourage stretch breaks	N/A	Link
Uncontrolled Hazardous Energy	Inadequate coverage for complex scenarios	Implement comprehensive lockout/tagout procedures for all hazardous energy sources	OSHA Lockout/Tagout	Link
Inadequate Preventive Maintenance	Not addressed	Develop a preventive maintenance schedule and ensure regular inspections and maintenance of equipment	OSHA Hazard Prevention	Link
Congested Work Areas	Not addressed	Implement space management strategies and ensure clear pathways and emergency exits	Canada Hazard Prevention	Link

Chemical Exposure	Limited coverage	Enhance chemical safety protocols, including risk assessments and training	Chemical Safety Training	Link
Inadequate Communication	Not addressed	Develop and implement a comprehensive hazard communication program	OSHA Hazard Communication	Link
Improper Use of PPE	Not addressed	Provide training on proper PPE usage and ensure availability of appropriate PPE	N/A	Link
Insect Spray	Limited coverage	Evaluate and control the use of insect sprays, ensuring safe application and ventilation	Insect Spray Safety	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 incomplete	Unauthorized work leading to safety hazards	Lack of awareness or oversight	Implement a mandatory checklist for permit verification before work begins
Precautions, step warnings, Hold Points	Steps not followed or ignored	Increased risk of accidents or equipment damage	Inadequate training or supervision	Conduct regular training sessions and audits to ensure compliance
Personal Protective Equipment (PPE)	PPE not used or inadequate	Increased risk of injury to personnel	Lack of enforcement or availability	Ensure PPE availability and enforce strict compliance through supervision
Work instructions for information	Instructions not followed or misunderstood	Incorrect task execution leading to system failure	Poor communication or unclear instructions	Simplify instructions and conduct briefings before task execution
ORNL subject area requirements	Non-compliance with specific requirements	Legal and safety violations	Lack of knowledge or disregard for rules	Regularly update and communicate requirements to all personnel

Discuss group/individual responsibilities	Miscommunication of roles	Task overlap or neglect leading to inefficiencies	Lack of clarity in role assignment	Clearly define roles and responsibilities in pre-task meetings
Follow work instructions & safety procedures	Deviations from procedures	Safety incidents or task failures	Complacency or pressure to expedite work	Reinforce the importance of adherence through leadership example
Availability/location of materials, tools, etc.	Tools/materials not available when needed	Delays in task completion	Poor planning or inventory management	Implement a robust inventory management system
Previous experiences / lessons learned	Lessons not integrated into current practices	Repeated mistakes or inefficiencies	Failure to document or communicate past experiences	Establish a lessons-learned database accessible to all staff
Response if work cannot be performed as planned	Inadequate contingency plans	Project delays or safety risks	Lack of foresight or flexibility	Develop and communicate contingency plans for common issues
Potential error traps with the job	Error-prone tasks not identified	Increased likelihood of errors	Lack of risk assessment	Conduct thorough risk assessments and error-proofing strategies
Take a minute before: work start & leaving work area	Failure to pause and assess	Overlooked hazards or incomplete tasks	Rushed work environment	Encourage a culture of mindfulness and safety checks