Work scope details:

Title: Replace Motor Controls for K-9 and K-7 Office Area Supply and Charging Area Supply

Work Scope Summary: - This work plan involves the rebuilding and upgrading of motor control components and wiring for the K-9 and K-7 office area supply and charging area supply. The existing components have exceeded their designed lifespan and are malfunctioning, necessitating replacement with modern, approved components. The work includes removal and installation of MCC buckets, installation of new wiring, and functional testing of systems.

Key Work Scope Components: - Perform Complex Lock/Tag/Verify (L/T/V) procedures - Remove and rebuild MCC buckets with specified components - Install new MCC bucket control components - Install new power and control wiring as needed - Complete all field installations - Perform functional testing on pump motors - Conduct 3525 ventilation fan interlocks testing

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference link
Allen Bradley Centerline 2100 Motor Control Center Latch/Interlock Issue	On 11-20-08, during a shutdown of an Allen Bradley 2100 Motor Control Center, internal arcing and smoking occurred inside a bucket while operating the MCC breaker handle. The latch/interlock mechanism was dislodged, contacting the line side of the C phase fuse cap.	Ensure secure latch/interlock mechanisms to prevent dislodging and potential electrical hazards.	Link
Fatal Electrocution Incident in Coaling, Alabama	On June 19, 2024, a foreman was fatally electrocuted while replacing a broken switch on distribution power lines. The equipment was not de-energized, and expired protective gear was used, violating lockout/tagout procedures.	Strict adherence to lockout/tagout procedures and regular inspection of protective gear are critical for safety.	Link
Amputation Injuries at Cleveland Bakeware Company	In June and July 2024, two amputation injuries occurred due to improperly secured pullbacks and inadequate lockout procedures on mechanical power presses.	Proper machine guarding and adherence to electrical safety protocols are essential to prevent injuries.	Link
OSHA Accident Report	A workplace incident involving electrical components where safety procedures around motor control centers and lock/tag/verify may have been implicated.	Review and improve safety procedures around motor control centers to prevent similar incidents.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Electrical Arcing and Smoking	Not specifically addressed in current controls	Implement regular maintenance and inspections to prevent arc flashes; determine appropriate PPE based on potential hazards	GW Electric, OSHA, University of Oregon	Link
Electrocution	Not specifically addressed in current controls	Use insulation, guarding, grounding, and electrical protective devices; implement GFCIs to reduce electrical hazards	Sabanci University, OSHA, Safety Notes	Link
Amputation and Mechanical Injuries	Not specifically addressed in current controls	Implement work practices, employee training, and administrative controls to prevent amputation hazards; use machine guards	OSHA, Safety Matters Weekly, DuraLabel	Link
Ergonomic Strain	Not specifically addressed in current controls	Recognize and control ergonomic hazards; use engineering controls to change tools, equipment, job design, or work area	OSHA, California DIR, Veriforce	Link
Slips, Trips, and Falls	Not specifically addressed in current controls	Conduct regular inspections to identify and mitigate slip, trip, and fall hazards; improve lighting and signage	Clarion Safety, Online Safety Trainer, HSE Blog	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	Miscommunication or oversight	Ensure all permits are reviewed and approved before work begins

Precautions, step warnings, Hold Points	Steps not followed or ignored	Increased risk of accidents or equipment damage	Lack of awareness or training	Conduct thorough pre-job briefings and enforce adherence to procedures
Personal Protective Equipment (PPE)	PPE not used or inadequate	Injury to personnel	Non-compliance or incorrect PPE selection	Verify PPE requirements and compliance before work starts
Work instructions for information	Instructions not followed or misunderstood	Incorrect installation leading to system failure	Poor communication or inadequate training	Provide clear and detailed work instructions; conduct training sessions
ORNL subject area requirements	Requirements not met	Non-compliance with safety standards	Lack of understanding or oversight	Regular audits and checks to ensure compliance
Kneeling pads, stretch breaks, worker rotation	Ergonomic controls not implemented	Worker fatigue or injury	Ignorance or neglect	Schedule regular breaks and rotate tasks to minimize strain
Heat/Cold Stress exposure assessment	Inadequate assessment of environmental conditions	Heat/cold-related illnesses	Failure to monitor conditions	Implement regular environmental assessments and adjust work schedules accordingly
Manual Material Handling controls	Improper lifting techniques	Musculoskeletal injuries	Lack of training or disregard for guidelines	Train workers on proper lifting techniques and use mechanical aids
Hearing protection	Inadequate hearing protection	Hearing damage	Incorrect assessment of noise levels	Conduct sound level surveys and ensure appropriate hearing protection is used
Take-A-Minute evaluation	Evaluation not performed	Unaddressed hazards leading to accidents	Time pressure or neglect	Mandate "Take-A-Minute" evaluations before task execution
Work Hand-off / Turnover	Poor communication during hand-off	Misunderstanding leading to errors	Lack of clear communication protocols	Establish clear communication protocols and document hand-offs
Emergency Response	Inadequate emergency response plan	Increased risk during emergencies	Lack of training or preparedness	Develop and train on comprehensive emergency response plans

Engineering Control codes	Controls not implemented or ineffective	Exposure to hazards	Misapplication or lack of resources	Ensure proper implementation and maintenance of engineering controls
Administrative Control Codes	Administrative controls not enforced	Increased risk of non-compliance	Lack of oversight or enforcement	Regularly review and enforce administrative controls
Fall Protection Authorized Person Training	Training not conducted or inadequate	Increased risk of falls	Lack of training or awareness	Conduct regular training sessions and refreshers on fall protection
Ergonomic Conditions assessment	Ergonomic risks not assessed	Worker discomfort or injury	Neglect or lack of awareness	Conduct ergonomic assessments and adjust workstations accordingly