Work scope details:

Title: Welder Grade GR3 Tasks

Work Scope Summary: - The work scope involves tasks that are suitable for Grade 3 craft personnel, requiring specific permits and documentation as directed by the supervisor. The tasks include various welding processes, equipment setup, and supporting other crafts within the personnel's skill set.

Key Work Scope Components: - Obtaining necessary permits (e.g., hot work, confined space) - Performing welding, burning, and brazing using different processes - Conducting grinding, chipping, and brushing tasks - Setting up equipment as directed by the supervisor - Supporting other crafts within the personnel's capabilities

Relevant previous events and lessons learned:

Event Title	Event Summary	Lessons Learned	Reference link
Fatal Hydraulic Tank Explosion	A 37-year-old Hispanic male welder died when struck by a piece of a hydraulic tank that exploded during pressure testing. The welder used an air compressor without a regulator or gauge, leading to the tank's rear end plate blowing off and causing the fatality.	Ensure proper use of pressure testing equipment, including regulators and gauges, to prevent over-pressurization. Implement strict safety protocols and training for pressure testing.	Link
Argon Gas Asphyxiation	A contractor died of asphyxiation due to argon gas used in the welding process. The accident was attributed to the lack of proper safety procedures.	Establish and enforce comprehensive safety procedures for welding operations, particularly when using inert gases. Ensure adequate ventilation and monitoring of gas levels.	Link

Missing Hazards:

Hazard	Missing or Inadequate Mitigation in Current Work Control Document	Recommended Mitigation for Revision	Reference link	SBMS Link
Mechanical hazards (e.g., rotating equipment, sharp objects)	Not addressed	Ensure guards are in place, functional safety interlocking devices, warning signs, avoid loose clothing, follow manufacturer's manual, safe-holding safeguarding, use hand-feeding tools	N/A	Link

Ergonomic conditions (e.g., repetitive motion, posture)	Not addressed	Conduct exposure assessment, evaluate workstations and posture, diversify activities, specify PPE, use special tools, implement stretch breaks, and worker rotation	N/A	Link
Over-pressurization during pressure testing	Not addressed	Verify pressure ratings, assess components for continued use, create a checklist for upgrades, establish exclusion zones	OSHA Pressure Vessels, INGAA Pressure Testing, Pneumatic Testing Safety	Link
Argon gas asphyxiation	Not addressed	Implement controls for gas detection, ensure proper ventilation, provide training on gas hazards	N/A	Link
Inadequate ventilation	Not addressed	Implement ventilation systems to control airborne substances, ensure effective extraction of hazardous gases	Navy Administration Ventilation, Hazardex Ventilation Guide	Link
Improper use of welding equipment	Not addressed	Clean surfaces of coatings, position workers to avoid fumes, provide training on equipment use	OSHA Welding Safety, Lincoln Electric Welding Safety	Link
Lack of proper PPE	Not addressed	Ensure availability and proper use of PPE, provide training on PPE use	Simplified Safety PPE, Andandappe PPE Compliance	Link
Time pressures and high workload	Not addressed	Implement workload management strategies, use automation, provide adequate staffing	CCOHS Hazard Controls	Link
Vague guidance and imprecise communications	Not addressed	Develop clear communication protocols, provide detailed guidance and training	OSHA Hazard Prevention, Safety Human Factors Chap24-WML-5thEdHandbookHFErev(2021)inpress.pdf)	Link

Failure mode analysis:

Current control	Failure mode of the control	Effect of Failure	Cause of Failure	Recommended action
Written permits for work activity	Permit not obtained or incorrect	Unauthorized work leading to safety hazards	Miscommunication or oversight in permit process	Implement a checklist system to verify permits before work begins
Personal Protective Equipment (PPE)	PPE not used or inadequate	Increased risk of injury from exposure to hazards	Lack of training or availability of PPE	Conduct regular PPE training and audits to ensure compliance
Work instructions & safety procedures	Instructions not followed or unclear	Increased risk of accidents or errors	Inadequate training or vague instructions	Regularly review and update work instructions; provide clear training
Engineering Controls (e.g., ventilation)	Ventilation system failure	Exposure to harmful fumes or gases	Equipment malfunction or lack of maintenance	Schedule regular maintenance and inspections of ventilation systems
Mechanical guarding	Guards not in place or malfunctioning	Risk of injury from moving parts	Poor maintenance or improper installation	Implement a routine check for guards before starting work
Atmospheric monitoring	Failure to monitor or incorrect readings	Exposure to hazardous atmospheric conditions	Equipment failure or human error	Use redundant monitoring systems and conduct regular calibration
Securing of compressed gas cylinders	Cylinders not secured properly	Risk of explosion or gas leak	Improper handling or storage practices	Provide training on proper securing techniques and conduct regular checks
Ergonomic assessments	Lack of ergonomic considerations	Increased risk of musculoskeletal disorders	Inadequate assessment or lack of awareness	Conduct regular ergonomic assessments and provide ergonomic tools
Emergency response plan	Plan not followed or inadequate	Delayed response to emergencies	Lack of training or unclear procedures	Conduct regular emergency drills and update plans as necessary