

ARC WELDING (UNDERGROUND)

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JOB STEPS	POTENTIAL HAZARDS	SAFE JOB PROCEDURES
Safety precautions		Before any work begins, obtain a Hot Work Permit as outlined in the Hot Work Permit Procedure. Always use a welding hood with proper shaded lens. Wear snug fitting clothing that will not burn or melt readily and welding gloves. Welding leathers are preferred and required if welding overhead. Ear protection should worn if welding overhead. Do not wear oil, grease soaked or wet clothing. Before towing trailer mounted welders to worksite, ensure safety chains are in good condition and properly attached to equipment and oxygen and acetylene bottles are secured. Verify wheels and tires are in good condition and there are no missing lug nuts and nuts are tight.
1. Inspect work area	1. Ignition Slip/trip	1. Clean area of stumbling objects. Inspect and clean area of combustible or flammable material (oil, fuel, paper, etc.). If necessary, wash the area down where welding will be performed. Remove batteries from area where work is being performed. Ensure entire area within 10' of the worksite is well rock dusted. Take methane tests to ensure there are no methane feeders present by checking against the floor, roof and ribs rather than just measuring 12 inches away from them and anywhere methane may accumulate in affected area. On the longwall, an extendable probe must be used to check for methane in and underneath the panline. Be aware in wet conditions to avoid electrical shock. Before operating diesel powered welders, do proper pre op, and check fluid levels, fire suppression system, hoses and wiring for any defects. Repair before operating. Check for oil and coal accumulations and wash as needed.
2. Prepare material	2. Falling objects Overexertion/strain	2. Lay out material to be welded. Remove any paint, grease, oil, dirt or other debris on the material being welded. Make certain material is well grounded. Place brattice or welding curtain to serve as a blind and to deflect sparks from hitting the ribs. If a brattice or welding curtain cannot be hung to adequately protect passers-by from flash hazards, the area must be dangered off or otherwise guarded to prevent inadvertent exposure. Notify people in the area of potential flash burn hazard.

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3. Check equipment	3. Explosion Overexertion/strain Electrocution Electrical shock	3. Ensure all items required by the Hot Work Permit are present and functional. Make a visual examination of equipment. With power off, layout and inspect entire length of lead and ground for nicks, cuts or bare wires. Nicks, cuts and bare places must be repaired before work begins. Check electrode holder and ground clamp for damaged or missing insulators and replace if needed. Ensure both lead lugs are guarded. Lead and ground cannot be in contact with oxygen or acetylene bottles, or fire extinguisher.
4. Welding	4. Burn Electrical shock Explosion Fire Slip/trip	4. Check affected area for methane before starting and continuously thereafter while welding. Methane levels must be less than 0.5% before welding begins. If methane concentration meets or exceeds 0.5%, the Shift Coordinator must be contacted. The Shift Coordinator may authorize welding in concentrations between 0.5% and 0.9%. No welding is allowed when methane concentrations meet or exceed 1.0%. Keep body parts clear of hot, falling materials. Regularly check area for hot spots or fires. If conditions change at any time, welding shall cease until the area has been re-evaluated to ensure conditions are safe for welding. All individuals located within the screened area must wear welding protection. Welding protection (UV goggles, shield, etc.) will be worn whether the individual is holding material being welded, clearing the area of gases (pan line etc.) or monitoring gasses.
5. Clean up	5. Burn Electrical shock Explosion Fire Slip/trip	5. If leaving the area, mark welded material as "HOT" to warn co-workers. Use extreme caution when handling hot metal. When job is complete, turn off welder and remove welding rod from the stinger. Disconnect, coil and store leads in the proper area. Clean work area and make a diligent search for hot spots or fires. Recheck the area for hot spots between 20 and 60 minutes after completing the hot work.

- ALWAYS WEAR PERSONAL SAFETY EQUIPMENT. ADDITIONAL EQUIPMENT SHOULD BE WORN IF THE TASK REQUIRES IT.
- MALFUNCTIONS AFFECTING SAFETY MUST BE REPAIRED PRIOR TO OPERATION OF EQUIPMENT.
- THIS TASK UTILIZES HAZARDOUS CHEMICALS. KNOW HOW TO ACCESS MSDS'S IF NEEDED.

NOTE: WHEN WORKING ON LONGWALL, ALWAYS CHECK INSIDE OF PANLINE AND UNDER PANLINE FOR METHANE WITH AN EXTENDABLE PROBE. USE AN AIR LINE OR ADDITIONAL VENTILATION TO CLEAR IF NEEDED. IN CERTAIN CASES, THE PANLINE MAY NEED TO BE RAISED AND BLOCKED IN POSITION TO CLEAR THE METHANE.