



VUL-SWP-025-Poly Butt and Fusion Welding

STANDARD WORK PROCEDURE (SWP)	
Description	<i>Poly Butt and Fusion Welding</i>
Site	<i>Vulcan Mine</i>
Department	<i>Construction</i>
Purpose	<i>The purpose of this SWP is to provide a documented way of working to achieve an acceptable level of risk. The steps outlined pertain to the titled task only. All other SHMS requirements such as SOPs VUL-SOP-056-PPE and VUL-SOP-Dust must be followed.</i>
PPE Required	
 HEAD PROTECTION (HARD HAT)	 EYE PROTECTION (SAFETY GLASSES)
 BODY PROTECTION (HIGH VIS - LONG SLEEVE / PANTS)	 FOOT PROTECTION (SAFETY BOOTS)
 HAND PROTECTION (GLOVES)	
Job Step Analysis Reference	
Other Relevant Information	
Task Specific PPE	
 FACE PROTECTION (FULL FACE SHIELD)	 LUNG PROTECTION (P2 MASK MINIMUM)
 EAR PROTECTION (EAR PLUGS / EAR MUFFS)	
<i>ERT resources available on-site during operations. VUL-SOP-039.2(a) Working Alone</i>	
<i>Personnel performing plumbing tasks shall be fully inducted, hold the relevant training & competencies to complete the work and adhere to site fitness for work requirements.</i>	
<i>Work Instruction is based on working in a controlled environment. If the environment, tools, equipment changes and or a deviation from this Work Instruction, a new JHA must be created and approved by all workers conducting the task.</i>	
Critical (Hazard) Risks	
Ensure controls are in place for critical risks associated with this task. These include:	• Hazardous Substances • Uncontrolled Movement • Falling objects • Heat • Vehicle/Pedestrian Contact • Lifting & moving of loads • Weather • Biological



1. PLANNING AND PREPARATION
1.1 Plan & Prepare for Site
• Conduct pre-start meeting to discuss tasks, hazards and controls • Wear required site PPE including hard hat, safety glasses, long sleeved high-vis shirt, sleeves down, long pants, high ankle zip and/or laced up steel capped boots, Cut 5 rated safety gloves on person and personal isolation lock • Ensure fundamental stability of vehicle during loading • Ensure all sharp edges are protected and suitable gloves are worn when handling equipment • Secure all loads to vehicle in an approved manner • Coordination for the communication of isolation, commissioning, and testing
2. GENERAL
2.1 Work Area Housekeeping
• Maintain cleanliness of worksite • Clean up as the job progresses • Remove all excess material from the worksite • Use correct receptacles for rubbish • Ensure no loose objects are stored/placed where they can fall • Conduct regular inspection/cleanup of work area • Store all materials in an orderly manner • Remove all barricading and signage after job complete • Correct segregation of waste in bins provided
2.2 Working Alone
• If working alone, VUL-FRM19-14- Working Remotely or Alone Permit and complete a JHA • OCE or Supervisor to check in with worker at least every two hours • Handheld radio to be always carried • Up to date map of location of person working alone and/or SPOT device or similar;
2.2 Working Outdoors
• Notify supervisor of intentions to work alone • Ensure regular rest breaks/utilisation of shaded areas provided • Keep hydrated-ensure regular fluid intake • Utilise temporary shades, if needed • Wear hard had brims, if needed • Use sunscreen SPF 30 and above • Keep alert for snakes, spiders, and other biting insects/fauna. Report to the environmental department • Monitor weather and adhere to VUL-TAR-004-TARP-Severe Weather • Apply insect barrier sprays/creams • Maintain correct PPE and wear correctly • Dust suppression as required • If possible, work outside in cooler parts of the day and inside during the hotter parts of the day
2.6 Access the Work Areas
• Spotter to communicate and direct light vehicle operator and control area around plant • Ensure the work access and egress routes are free of obstacles and slip and trip hazards • Set up Entry/Exit point signage and/or barricading for areas of high-risk work areas, if required • Monitor weather and adhere to VUL-TAR-004- Weather



3. POLY BUTT AND FUSION WELDING
3.1 Cut pipe to desired length
• Poly Butt and fusion welding authorisation • Cut away from the pipe curve or use straight pipe • Guards in place • Correct PPE – gloves, face shield, chaps • Loose clothing tucked away Spotter in place • Identify the line of fire and position all personnel outside the potential path of kickback or flying debris • Stabilise pipe during cutting
3.2 Clean pipe ends, planing unit and heating plate
• Use approved cleaning solvent (ethanol, isopropanol) • Ensure all foreign matter removed • Read and follow SDS for use of solvent including proper ventilation and use of PPE (including gloves and eye protection) • Keep away from heat sources to prevent ignition • Use clean lint-free cloth to remove all foreign material • If the pipe has a protective outer layer, it shall be peeled back far enough so that the pipe can be properly clamped in the welding machine
3.3 Position pipe into welding frame
• Butt welding equipment must be set up, operated and maintained in accordance with the manufacturer's operating instructions for the plant • Use of machinery/mechanical aides (forklift, cranes etc) for heavy pipes • Trained, assessed and authorised in the machinery/mechanical aides being used • Hand-held radios • Positive communication • Spotter in place • Tagged and in-date lifting equipment • Maintain situational awareness • Use of tag lines to control pipe movement • Use PPE (gloves) and maintain awareness of pinch point areas during positioning
3.4 Secure clamps in welding frame
• Adjust as necessary to ensure pipe is aligned correctly • Utilise pipe support (rollers, low friction alignment blocks etc.), if needed • Align printed pipe details at top of machine, when possible
3.5 Plane the pipework with the end preparation tool
• Use PPE (gloves, hearing and eye protection) and maintain awareness of pinch point areas during planing • Ensure loose clothing, hair, and jewellery are secured to prevent entanglement in rotating parts • Position yourself to avoid flying debris and use guards or shields to contain plastic shavings • Allow the tool to cool between uses if overheating is a concern
3.6 Check pipe to ensure ends are square and aligned
• Ensure hands are clear of pinch of poly pipe when checking for proper alignment and gap • Remove shavings • Inspect pipe ends for incomplete planning, voids, imperfections • Do not touch the planed surfaces



3.7 Calculate gauge and drag pressures
- Calculate gauge and drag pressures as per ISO/FDIS 21307 recommendations for the specific pipe size and type - Ensure correct pressure values are applied to avoid joint failure
3.8 Heat plate to required temperature
- Follow Butt jointing procedures in ISO/FDIS 21307 for the pipe type for heating temperature: - Table 1 – Single low-pressure - Table 2 – Dual low-pressure - Table 3 – Single high-pressure - Verify heater plate temperature with a thermometer before inserting the plate into the machine - Use appropriate PPE to protect against burns when handling the heating plate (e.g., heat-resistant gloves)
3.9 Insert heating plate and close gap for contact
- Ensure the heating plate is fully heated before insertion. - Use appropriate PPE to protect against burns when handling the heating plate (e.g., heat-resistant gloves)
3.10 Remove heat plate and close pipe gap
- Allow recommending heating time as per the poly welding unit - Correct manual handling procedures to be followed when removing plate - Use appropriate PPE to protect against burns when handling the heating plate (e.g., heat-resistant gloves)
3.11 Cooling the pipe
- Allow recommending cooling time as per the poly welding unit - Avoid moving or handling the pipe until the cooling phase is complete to prevent joint failure
3.12 Remove welding clamps and pipe from welding frame
- Use of machinery/mechanical aides (forklift, cranes etc.) for heavy pipes - Hand-held radios - Spotter in place - Tagged and in-date lifting equipment - Maintain situational awareness - Positive communication - Use of tag lines to control pipe movement
4 CLEAN-UP WORK AREA
4.9 Clean Work Area and Removal of Equipment
- Regular assessment of ground conditions - Monitor weather and adhere to VUL-TAR-004-Weather - Maintain communication between personnel and plant