



WELDING PROCEDURE SPECIFICATION

WPS: 2010-xxxx-1/8

REV. NO.: 1

DATE: 10/3/2005

APPLICABILITY

WELDING PROCESS: GTAW and GTAW

CODE: ASME IX

OTHER:

SUPPORTING PQR: Z-WS-9 P-WS-191-1 P-WS-226

JOINT: This WPS shall be used in conjunction with the General Welding Standards (GWS) and Welding Fabrication Procedure (WFP) sections and criteria for joint details, repairs, NDE, inspection, etc.

Weld Joint Type: Butt/Fillet**Class:** Full & Partial Penetration & Fillets**See GWS 1-06 and WFP's for joint details.****Preparation:** Thermal/Mechanical**Root Opening:** 0 - 1/8**Backing:** Gas/ring/back welding**Backgrind Root:** On double sided joints**Backing Mat.:** CS Strap/ring when used**Bkgrd Method:** Grind/chip/file**GTAW Flux:** N/A**Backing Retainer:** N/A**FILLER METALS:****Class:** ER309/310 and ER309/310**A No:** 8**SFA Class:** 5.9 and 5.9**F No:** 6 and 6**Size:** 1/16 3/32 1/8**Insert:** N**Insert Type:** N/A**Weld Metal Thickness Ranges:****Flux:** Type: N/A**Size:** N/A**AWS Root Pass:****Filler Material Note:** ER 310 used for buttering the A-333 side of joint**AWS Balance:****ASME Root Pass:** 0.062 thru 0.125**ASME Balance:** 0.062 thru 0.75**BASE MATERIAL:**

Spec.: = .030 C CS- Pipe, plate, sheet & strip	P No: 1	Gr No.: All	to P No.: 8	Gr No.: All
Qualified Pipe Dia. Range: >=	Grade: All	to Spec.: SS- Pipe, plate, sheet & shapes		Grade: All
Qualified Thickness Range:	AWS: 0	ASME: 0.25		
	AWS:	ASME: 0.062 thru 0.75		

QUALIFIED POSITIONS:**AWS:** All**ASME:** All**Vert. Prog.:** Up

Preheat Min. Temp.: 50	GAS: Shielding: Argon	or
Interpass Max. Temp.: 350 °F	Gas Composition: 100 / / %	0 / 0 / 0 %
Preheat Maintenance: 50 °F	Gas Flow Rate cfh: 10 to 25	0 to 0
PWHT: Time @ °F Temp.: 0	Backing Gas/Comp: Argon	100 %
Temperature Range: N/A °F to N/A °F	Backing Gas Flow cfh: 3 to 8	
	Trailing Gas/Comp: N/A	0 %

WELDING CHARACTERISTICS:**Current:** DCEN and DCEN**Tungsten Type:** EWTh-2**Transfer Mode:** N/A**Ranges:** Amps: 60 to 175**Tungsten Dia.:** .062 to 1/8**Pulsing Cycle:** 0 to 0**Volts:****Background Current:** 0**Fuel Gas:** N/A**Flame:** N/A**Braze Temp °F:** N/A to N/A

WELDING TECHNIQUE: For fabrication specific requirements such as fitup, cleaning, grinding, PWHT and inspection criteria, refer to Volume 2, Welding Fabrication Procedures.

Technique: Manual**Cleaning Method:** Wire Brush, File, Grind**Single or Multi Pass:** M**Stringer or Weave Bead (S/W):** S/W**Oscillation:** N/A**GMAW Gun Angle:** 0° to 0°**Forehand or Backhand for GMAW:** N/A**No Pass > 1/2":****GMAW/FCAW Tube to Work Distance (in):** N/A**Maximum K/J Heat Input:** N/A KJ/in**Travel Speed:** Variable**Gas Cup Size:** #3 - 6**PROCEDURE QUALIFIED FOR:****Charpy "V" Notch:** Y**Nil-Ductile Transition Temperature:** N/A**Dynamic Tear:** N/A

Comments: No comments.

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	GTAW	ER309/310	1/16	60 to 175		4 to 8	0 to 0	
2	GTAW	ER309/310	3/32	60 to 175				
3	GTAW	ER309/310	1/8	60 to 175				
4	GTAW	ER309/310						

REM. * Weld layers are representative only - actual number pf passes and layer sequence may vary.

ML-1/2 projects or jobs must determine if the supporting documentation for this WPS complies with quality requirements of the project/job.

Use of LANL Welding Procedures and Welder Qualifications for non-LANL work shall be at the sole risk and responsibility of the Subcontractor, and the Subcontractor shall indemnify and save LANL and the Government harmless from any and all claims, demands, actions or causes of action, and for any expense or loss by the reason of Subcontractor's and their employees posession and use of LANL procedures and qualifications.

APPROVAL: Signatures on file at ES-FE

DATE: 10/3/2005