



WELDING PROCEDURE SPECIFICATION

WPS - 2010-xxxx-23 **REV. NO.:** 2 **DATE:** 10/8/2009 ****APPLICABILITY****
WELDING PROCESS: GTAW- and GTAW- **ASME:** X **AWS:** X **OTHER:**
SUPPORTING PQR: 200-23-P P-WS-10-1 P-WS-10-2 P-WS-151-1
P-WS-100-2 P-WS-100-1 2010-xxxx-23

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/Groove/Fillet	Class:	Full/Partial Penetration
See GWS 1-06 and WFP's for joint details	Preparation:	Thermal (plasma) /Mechanical
Root Opening: 0 - 3/32	Backing:	None/Strap/back welding
Backgrind root: or purged	Backing Mat.:	Al
Bkgrd Method: Grind if not purged	GTAW Flux: N/A	Backing Retainer: N/A

FILLER METALS:	Class:	ER4043	and	ER4043
A No: N/A SFA Class: 5.10 and 5.10	F No: 23 and 23	Size: 1/16	3/32	1/8
Insert: N/A Insert Desc.: N/A	Weld Metal Thickness Ranges:			
Flux: Type: NA	Size: 0	AWS Root Pass:	0.032 thru	0.75
Filler Metal Note:		AWS Balance:	0.032 thru	0.75
		ASME Root Pass:	0.032 thru	0.187
		ASME Balance:	0.064 thru	0.75

BASE MATERIAL	P/S No. 23	Gr No. All	to: P/S No. 23	Gr No. All
Spec. B-209 Al- Plate & sheet	Grade: All	to: Spec. B-209 Al- Plate & sheet		Grade: All
Qualified Pipe Dia. Range: ≥	AWS: 6	ASME: 0.75		
Qualified Thickness Range:	AWS: 0.032 thru	0.750	ASME: 0.032 thru	0.750

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

Preheat Min. Temp.: 70°F	GAS: Shielding:	Argon	or
Interpass Max. Temp.: 500°F	Gas Composition:	100 / 0 / 0 %	0 / 0 / 0 %
Preheat Maintenance: 70°F	Gas Flow Rate cfh:	10 to 25	0 to 0
PWHT: Time @ °F Temp. 0	Backing Gas/Comp:	Argon	100 %
Temp. Range: 0°F	Backing Gas Flow cfh:	3 to 10	
to 0°F	Trailing Gas/Comp:	N/A	0 %

APPROVAL: Signatures on file at ENG **DATE:** 10/8/2009

WELDING CHARACTERISTICS:

Current: AC and AC Tungsten Type: EWTh-2 Transfer Mode: N/A
 Ranges: Amps 25 to 300 Tungsten Dia.: 3/32 Pulsing Cycle: 40 to 60
 Volts 12 to 22 Background Current: 40%
 Fuel Gas: N/A Flame: N/A Braze temp. °F 0 to 0

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

Technique: Manual Cleaning Method: Wire Brush, File, Grind
 Single Pass or Multi Pass: M Stringer or Weave bead (S/W): S/W or Oscillation: N
 GMAW Gun Angle °: 0 to 0 Forehand or Backhand for GMAW (F/B): N/A
 No Pass >1/2": GMAW/FCAW Tube to work distance: N/A
 Maximum K/J Heat Input: 0 Travel speed: Variable Gas Cup Size: # 5

PROCEDURE QUALIFIED FOR:

Charpy "V" Notch: N/A Nil-Ductil Transition Temperature: N/A Dynamic Tear: N/A

Comments:

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	GTAW-	ER4043	1/16	25 to 160	12 to	to	0 to 0	
2	GTAW-	ER4043	3/32	150 to 250	to	to		
3	GTAW-	ER4043	1/8	240 to 300	to	to		
4	GTAW-	ER4043	1/8	to	to	to		

REM. * Weld layers are representative only - actual number of 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 reason of Subcontractor's and their employees possession and use of LANL procedures and qualifications.