



## WELDING PROCEDURE SPECIFICATION

**WPS - 2010-1-F32**                      **REV. NO.: 1**                      **DATE: 10/3/2005**                      **\*\*APPLICABILITY\*\***  
**WELDING PROCESS: GTAW-**                      **and GTAW-**                      **ASME: X**                      **AWS: X**                      **OTHER:**  
**SUPPORTING PQR: Z-BRS-3-GT-527**

**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.

<b>Weld Joint Type:</b> Butt/Fillet	<b>Class:</b>	Partial Penetration
<b>See GWS 1-06 and WFP's for joint details</b>	<b>Preparation:</b>	Thermal/Mechanical
<b>Root Opening:</b> .032 - .062	<b>Backing:</b>	N/A
<b>Backgrind root:</b> N/A	<b>Backing Mat.:</b>	N/A
<b>Bkgrd Method:</b> N/A	<b>GTAW Flux:</b> N/A	<b>Backing Retainer:</b> N/A

<b>FILLER METALS:</b>	<b>Class:</b>	ERCuSi	<b>and</b>	ERCuSi
<b>A No:</b> N/A	<b>SFA Class:</b>	5.6 and 5.6	<b>F No:</b>	32 and 32
<b>Insert:</b> N	<b>Insert Desc.:</b>	N/A	<b>Size:</b>	1/16 3/32 1/8
<b>Flux: Type:</b> NA	<b>Size:</b>	0	<b>Weld Metal Thickness Ranges:</b>	
<b>Filler Metal Note:</b>			<b>AWS Root Pass:</b>	0.025 thru 0.2
			<b>AWS Balance:</b>	0.025 thru 0.200
			<b>ASME Root Pass:</b>	0.05 thru 0.1
			<b>ASME Balance:</b>	0.050 thru 0.100

<b>BASE MATERIAL</b>	<b>P No.</b> 1	<b>Gr No.</b> All	<b>to: P No.</b> 1	<b>Gr No.</b> All
<b>Spec.</b> ASTM A-527	<b>Grade:</b> All	<b>to: Spec.</b> ASTM A-527	<b>Grade:</b> All	
<b>Qualified Pipe Dia. Range:</b> ≥	<b>AWS:</b> 24	<b>ASME:</b> 0.84		
<b>Qualified Thickness Range:</b>	<b>AWS:</b> 0.025 thru	0.200	<b>ASME:</b> 0.050 thru	0.100

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

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

**APPROVAL:**                        Signatures on file at ENG                      **DATE:** 10/3/2005

**WELDING CHARACTERISTICS:**

Current: DCEN and DCEN Tungsten Type: EWTh-2 Transfer Mode: N/A  
 Ranges: Amps 35 to 150 Tungsten Dia.: 0.0625 Pulsing Cycle: 0 to 0  
 Volts to 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 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): W Oscillation: N/A  
 GMAW Gun Angle °: 0 to 0 Forehand or Backhand for GMAW (F/B): N/A  
 GMAW/FCAW Tube to work distance: N/A  
 Maximum K/J Heat Input: N/A Travel speed: Gas Cup Size: #3- 7

**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	Nozzel Angle	Other
1	GTAW-	ERCuSi	1/16	35 to 90	to	6 to 12	0 to 0	
2	GTAW-	ERCuSi	3/32	35 to 110	to	to		
3	GTAW-	ERCuSi	1/8	35 to 120	to	to		
4	GTAW-	ERCuSi		35 to 130	to	to		
5	GTAW-	ERCuSi						
6								

REM. \* Weld layers are representative only - actual number of passes and layer sequence may vary due to variations in joint design, thickness and fitup.

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.