



## WELDING PROCEDURE SPECIFICATION

**WPS - 2007-Extx-8-A**                      **REV. NO.:** 0                      **DATE:** 4/22/2010                      **\*\*APPLICABILITY\*\***  
**WELDING PROCESS:** GTAW-A    **and**                      **ASME:** X    **AWS:**    **OTHER:** DOE STD-3013-2003  
**SUPPORTING PQR:** ASME-01

**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> Square butt	<b>Class:</b>	Full penetration
<b>See GWS 1-06 and WFP's for joint details</b>	<b>Preparation:</b>	Machined - Clean with 100% ethyl alcohol
<b>Root Opening:</b> <0.005	<b>Backing:</b>	None (in glovebox)
<b>Backgrind root:</b> N/A	<b>Backing Mat.:</b>	N/A
<b>Bkgrd Method:</b> N/A	<b>GTAW Flux:</b>	<b>Backing Retainer:</b> N/A

<b>FILLER METALS:</b>		<b>Class:</b>	N/A	<b>and</b>	N/A
<b>A No:</b> N/A	<b>SFA Class:</b> N/A and N/A	<b>F No:</b> N/A and N/A	<b>Size:</b> N/A	N/A	N/A
<b>Insert:</b> N/A	<b>Insert Desc.:</b> N/A	<b>Weld Metal Thickness Ranges:</b>			
<b>Flux:</b> Type: N/A	<b>Size:</b> N/A	<b>AWS Root Pass:</b>	0 thru	0	
<b>Filler Metal Note:</b> N/A Autogenous weld		<b>AWS Balance:</b>	0 thru	0	
		<b>ASME Root Pass:</b>	0.05 thru	0.118	
		<b>ASME Balance:</b>	0.05 thru	0.118	

<b>BASE MATERIAL</b>	<b>P/S No.</b> 8	<b>Gr No.</b> All	<b>to:</b> P/S No. 8	<b>Gr No.</b> All
<b>Spec.</b> A-276 SS- Bar	<b>Grade:</b> All	<b>to:</b> Spec. A-276 SS- can		<b>Grade:</b> All
<b>Qualified Pipe Dia. Range:</b> ≥	<b>AWS:</b> 0	<b>ASME:</b> 0		
<b>Qualified Thickness Range:</b>	<b>AWS:</b> 0.000 thru	0.000	<b>ASME:</b> 0.062 thru	0.236

<b>QUALIFIED POSITIONS:</b>	<b>AWS:</b> N/A	<b>ASME:</b> All	<b>Vert. Prog.:</b>	V/Up-Dn
<b>Preheat Min. Temp.:</b> 70 °F	<b>GAS: Shielding:</b>	He	<b>or</b>	
<b>Interpass Max. Temp.:</b> 350 °F	<b>Gas Composition:</b>	100 /	/	%
<b>Preheat Maintenance:</b> N/A °F	<b>Gas Flow Rate cfh:</b>	10	<b>to</b> 30	<b>to</b>
<b>PWHT: Time @ °F Temp.</b> N/A	<b>Backing Gas/Comp:</b>	He*		100 %
<b>Temp. Range:</b>	<b>Backing Gas Flow cfh:</b>	0	<b>to</b> 0	
<b>to</b> N/A °F	<b>Trailing Gas/Comp:</b>	He*		100 %

**APPROVAL:**                      Signatures on file at ENG                      **DATE:** 4/22/2010

**WELDING CHARACTERISTICS:**

**Current:** DCEN and DCEN                      **Tungsten Type:** La-1.5                      **Transfer Mode:** N/A  
**Ranges: Amps**      80 to      130                      **Tungsten Dia.:**      0.093                      **Pulsing Cycle:** 60      to      40  
                          **Volts**      10 to      20    **Background Current:** 7  
**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:** Automatic part rotated                      **Cleaning Method:**                      Abrasive cloth/Ethel alcohol  
**Single Pass or Multi Pass:** S                      **Stringer or Weave bead (S/W):** S or                      **Oscillation:** N/A  
**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:** N/A                      **Travel speed:** 3.25 ipm                      **Gas Cup Size:** 0.150

**PROCEDURE QUALIFIED FOR:**

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

**Comments:** 1) Voltage is fixed with arc gap length of 0.055 - 0.075 in rotating welding head.  
2) All welding is performed in a Helium atmosphere inside a glove-box.

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	GTAW-A	N/A	N/A	80 to 130	10 to 20	3 to 5	0 to 0	
2		N/A	N/A	0 to 0	to	to		
3		N/A	N/A	0 to 0	to	to		
4		N/A	N/A	0 to 0	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.**