



## WELDING PROCEDURE SPECIFICATION

**WPS - 2010-45-F43**                      **REV. NO.: 1**                      **DATE: 9/8/2005**                      **\*\*APPLICABILITY\*\***  
**WELDING PROCESS: GTAW-**                      **and GTAW-**                      **ASME: X**                      **AWS: X**                      **OTHER:**  
**SUPPORTING PQR: 200-45(AL-6XN)**

**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>	Full or Partial Penetration
<b>See GWS 1-06 and WFP's for joint details</b>	<b>Preparation:</b>	Thermal/mechanical
<b>Root Opening:</b> 1/16 - 3/32	<b>Backing:</b>	Gas
<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> ERNiCrMo-3	<b>and</b>	ERNiCrMo-3
<b>A No:</b> N/A	<b>SFA Class:</b> 5.14	<b>and</b>	5.14
	<b>F No:</b> 43	<b>and</b>	43
	<b>Size:</b> 3/32		1/8
			1/8
<b>Insert:</b> N	<b>Insert Desc.:</b> N/A	<b>Weld Metal Thickness Ranges:</b>	
<b>Flux:</b> Type: NA	<b>Size:</b> N/A	<b>AWS Root Pass:</b>	0.125 thru 0.414
<b>Filler Metal Note:</b>		<b>AWS Balance:</b>	0.125 thru 0.414
		<b>ASME Root Pass:</b>	0.062 thru 0.414
		<b>ASME Balance:</b>	0.062 thru 0.414

<b>BASE MATERIAL</b>	<b>P No.</b> 45	<b>Gr No.</b> 0	<b>to:</b> <b>P No.</b> 45	<b>Gr No.</b> 0
<b>Spec.</b> ASTM B-688 SB-351	<b>Grade:</b> All	<b>to:</b> <b>Spec.</b> ASTM B-688 SB-351	<b>Grade:</b> All	
<b>Qualified Pipe Dia. Range:</b> ≥	<b>AWS:</b> 24	<b>ASME:</b> 0.25		
<b>Qualified Thickness Range:</b>	<b>AWS:</b> 0.125 thru	0.414	<b>ASME:</b> 0.062 thru	0.414

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

<b>Preheat Min. Temp.:</b> 60 °F	<b>GAS: Shielding:</b> Argon	<b>or</b>	
<b>Interpass Max. Temp.:</b> N/A °F	<b>Gas Composition:</b> 100 / 0 / 0 %		0 / 0 / 0 %
<b>Preheat Maintenance:</b> N/A °F	<b>Gas Flow Rate cfh:</b> 10 to 25		0 to 0
<b>PWHT: Time @ °F Temp.</b>	<b>Backing Gas/Comp:</b> Argon		100 %
<b>Temp. Range:</b>	<b>Backing Gas Flow cfh:</b> 1 to 2		
<b>to</b> °F	<b>Trailing Gas/Comp:</b> N/A		%

**APPROVAL:**                        Signatures on file at ENG                                         **DATE:**    1/19/2005

**WELDING CHARACTERISTICS:**

**Current:** DCEN and DCEN      **Tungsten Type:** EWTh-2      **Transfer Mode:** N/A  
**Ranges: Amps** 50 to 140      **Tungsten Dia.:** 0.065      **Pulsing Cycle:** 0 to 0  
    **Volts** 10 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):** S      **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:** 0      **Travel speed:** Variable      **Gas Cup Size:** N/A

**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-	ERNiCrMo-3	3/32	50 to 120	10 to 20	8 to 12	0 to 0	
2	GTAW-	ERNiCrMo-3	1/8	60 to 140	10 to 20	8 to 12		
3	GTAW-	ERNiCrMo-3	1/8	60 to 140	10 to 20	8 to 12		
4	GTAW-	ERNiCrMo-3	1/8	to	to	to		
5	GTAW-	ERNiCrMo-3	1/8					
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.

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