WELDING PROCEDURE SPECIFICATION

WPS- 1000-1/4140 **REV. NO.:** 0 **DATE:** 9/1/2004 ****APPLICABILITY****

WELDING PROCESS/ES SMAW- **and** SMAW- **ASME:** X **AWS:**

SUPPORTING PQ 100-1/4140 **OTHER:** N/

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 or Partial Penetration

See GWS 1-06 for details **Preparation:** Thermal/Mechanical

Root Opening: **Backing:** N/A

Backgrind root: N **Backing Mat.:** N/A

Bkgrd Method: N/A **GTAW Flux:** N/A **Backing Retainer:** N/A

FILLER METALS: **Class:** E9018 **and** E9018

A No: 4 **SFA Class:** 5.5 **and** 5.5 **F No:** 4 **and** 4 **Size:** 3/32 1/8 1/8 5/32

Insert: N **Insert Desc.:** N/A **Weld Metal Thickness Range:**

Flux: Type: N/A **Size:** 0 **AWS:** 0.125 **thru** 0.750

Filler Metal Note: **ASME:** 0.062 **thru** 0.750

BASE MATERIAL **P No.** 1 **Gr No.** 1 **to: P No.** N/A **Gr No.** 0

Spec. ASTM A-516 **Grade:** 22 **to: Spec.** AISI 4140 **Grade:** 0

Pipe Dia Range: **Groove >** 0

Thickness Range: Groove : **AWS:** 0.125 **thru** 0.750 **ASME:** 0.062 **thru** 0.750

QUALIFIED POSITIONS All **Vertical Progression:** Up

Preheat Min. Temp.:	350 **F**	**GAS: Shielding:**	N/A **or** N/A
Interpass Max. Temp.	500 **F**	**Gas Composition:**	0 **%** 0 **%** 0 **%**
Preheat Maintinance:	350 **F**	**Gas Flow Rate cfh**	0 **to** 0
		Backing Gas/Comp:	None 0 **%**
PWHT: Time @ F Temp.		**Backing Gas Flow cfh**	0 **to** 0
Temp. Range:	**F to F**	**Trailing Gas/Comp:**	0 **%**

PREPARED BY Kelly Bingham **DATE:** 3/30/2004

Signature on file at FWO-DECS

APPROVED BY Tobin Oruch **DATE:** 9/1/2004

Signature on file at FWO-DECS

Note:For SC/SS/ML-1/ML-2 work, this WPS requires independent review.

WELDING CHARACTERISTICS:

Current: DCEP **and** DCEP **Tungsten type:** N/A **Transfer Mode:** N/A

Ranges: Amps 70 **to** 160 **Pulsing Cycle:** 0 **to** 0

Volts 14 **to** 24 **Background Current:** 0

Fuel Gas: N/A **Flame:** N/A **Braze temp. F to**

WELDING TECHNIQUE: **For cleaning, grinding, and inspection criteria refer to Volume 2, Welding Fabrication Procedures**

Technique: Manual **Cleaning Method:** Wire Brush, File, Grind, Chip

Single Pass of Multi Pass: M **Stringer or Weave bead (S/W):** S **Oscillation:** N

GMAW Gun Angle °: 0 **to** 0 **Forehand or Backhand for GMAW (F/B):** N/A

Maximum K/J Heat Input **Travel speed/ipm:** 3 - 0 **Gas Cup Size:** N/A

PROCEDURE QUALIFIED FOR:

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

Comments:

Weld Layer	Manual Process	Filler Metals	Size	Amp Range		Volt Range		Travel ipm		Nozzel Angle	Other
1	SMAW-	E9018	3/32	70	140	14	24	3	9	0	
2	SMAW-	E9018	1/8	80	160	14	24	0	0	0	
3			1/8								
4			5/32								
5											
6											
7											
8											

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