WELDING PROCEDURE SPECIFICATION

WPS - 1000-xxxx-HY80/HSLA100 **REV. NO.:** 0 **DATE:** 5/26/2009 ****APPLICABILITY****

WELDING PROCESS: SMAW **and** SMAW **ASME:** X **AWS:** **OTHER:**

SUPPORTING PQR: 1000-HY80/HSLA100

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: Groove & Fillet	**Class:**	Full/Partial Penetration
See GWS 1-06 and WFP's for joint details	**Preparation:**	Thermal or mechanical cut
Root Opening: N/A	**Backing:**	Required for
Backgrind root: on double sided joints	**Backing Mat.:**	Metal
Bkgrd Method: Machine, grind or gouge	**GTAW Flux:** N/A	**Backing Retainer:** N/A

FILLER METALS: **Class:** Mil 11018 **and** Mil 11018

A No: N/A **SFA Class:** N/A **and** N/A **F No:** N/A **and** N/A **Size:** 1/8 1/8 5/32 5/32

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

Flux: Type: N/A **Size:** N/A **AWS Root Pass:** **thru**

Filler Metal Note: Meets MIL-E-22200-F1 **AWS Balance:** **thru**

ASME Root Pass: 0.187 **thru** 0.250

ASME Balance: 0.187 **thru** 8

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

Spec. HY 80 **Grade:** N/A **to: Spec.** HSLA 100 **Grade:** N/A

Qualified Pipe Dia. Range: ≥ **AWS:** 0 **ASME:** 2

Qualified Thickness Range: **AWS:** **thru** **ASME:** 0.187 **thru** 8.000

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

Preheat Min. Temp.:	225 **°F**	**GAS: Shielding:**	N/A **or** N/A
Interpass Max. Temp.:	300 **°F**	**Gas Composition:**	/ / **%** / / **%**
Preheat Maintenance:	225 **°F**	**Gas Flow Rate cfh:**	**to** **to**
PWHT: Time @ °F Temp.	N/A	**Backing Gas/Comp:**	N/A N/A **%**
Temp. Range:	N/A **°F**	**Backing Gas Flow cfh:**	**to**
to	N/A **°F**	**Trailing Gas/Comp:**	N/A 0 **%**

APPROVAL: Signatures on file at ENG **DATE:** 5/26/2009

WPS NO: 1000-xxxx-HY80/HSLA100

WELDING CHARACTERISTICS:

Current:	DCEP **and** DCEP	**Tungsten Type:**	N/A	**Transfer Mode:**	N/A
Ranges: Amps	100 **to** 180	**Tungsten Dia.:**	N/A	**Pulsing Cycle:**	N/A **to** N/A
Volts	18 **to** 24			**Background Current:**	N/A
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:**	Chip, Grind, Wire Brush, machine		
Single Pass or Multi Pass:	Multi	**Stringer or Weave bead (S/W):**	S **or** W	**Oscillation:**	2x
GMAW Gun Angle °:	**to**	**Forehand or Backhand for GMAW (F/B):**			N/A
No Pass >1/2":	True	**GMAW/FCAW Tube to work distance:**	N/A		
Maximum K/J Heat Input:	62	**Travel speed:**	to meet ≤ 62 kj	**Gas Cup Size:**	N/A

PROCEDURE QUALIFIED FOR:

Charpy "V" Notch: Yes	**Nil-Ductil Transition Temperature:** No	**Dynamic Tear:** Yes

Comments: This WPS is qualifed for use with a MOT of +30 F for the vessel repair welds (E11018-M) and the Nozzles. Charp and DT's were done at several different temperatures to establish a useful curve.

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	SMAW	Mil 11018	1/8	100 **to** 125	18 **to** 20	2.5 **to** 3.5	**to**	
2	SMAW	Mil 11018	1/8	110 **to** 135	18 **to** 20	2.5 **to** 3.5		
3	SMAW	Mil 11018	5/32	125 **to** 145	19 **to** 22	2.5 **to** 3.5		
4	SMAW	Mil 11018	5/32	135 **to** 170	20 **to** 23	3.5 **to** 6		
5								
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.