WELDING PROCEDURE SPECIFICATION

Los Alamos NATIONAL LABORATORY

WPS - 1000-8   **REV. NO.:** 1   **DATE:** 7/15/2005   ****APPLICABILITY****

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

SUPPORTING PQR: Z-WS-SM-8 -1   P-WS-228-1   P-WS-228-2   P-WS-228-3

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
Root Opening: 3/32 - 3/16	**Backing:**	Strap, ring or backweld
Backgrind root: Double sided joints	**Backing Mat.:**	CS strap/ring
Bkgrd Method: Arc gouge or grind	**GTAW Flux:** N/A	**Backing Retainer:** N/A

FILLER METALS   **Class:** E-3XX-xx **and** E-3XX-xx

A No: 8   **SFA Class:** 5.4 **and** 5.4   **F No:** 5 **and** 5   **Size:** 3/32   1/8   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: No bead or pass shall be greater than 1/2"in thichness.

AWS Balance:	0.063	**thru**	1.500
ASME Root Pass:		**thru**	
ASME Balance:	0.063	**thru**	1.500

BASE MATERIAL   **P No.** 8   **Gr No.** All   **to: P No.** 8   **Gr No.** All

Spec. ASTM A-240/312   **Grade:** All   **to: Spec.** ASTM A-240/312   **Grade:** All

Qualified Pipe Dia. Range: ≥   **AWS:** 4   **ASME:** 0.125

Qualified Thickness Range: **AWS:** 0.063 **thru** 1.500   **ASME:** 0.063 **thru** 1.500

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

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Preheat Min. Temp.: 50 °F	**GAS: Shielding:**	N/A	**or**	N/A	
Interpass Max. Temp.: 350 °F	**Gas Composition:** 0 / 0 / 0 **%**			0 / 0 /	**%**
Preheat Maintenance: 50 °F	**Gas Flow Rate cfh:** 0 **to** 0			0 **to** 0	
PWHT: Time @ °F Temp. N/A	**Backing Gas/Comp:** N/A			0 **%**	
Temp. Range: 0 °F	**Backing Gas Flow cfh:** 0 **to** 0				
to 0 °F	**Trailing Gas/Comp:** N/A			0 **%**	

APPROVAL: Signatures on file at ENG   **DATE:** 7/15/2005

WELDING CHARACTERISTICS:

Current: DCEP **and** DCEP	**Tungsten Type:** N/A		**Transfer Mode:** N/A	
Ranges: Amps 70 **to** 205	**Tungsten Dia.:**		**Pulsing Cycle:** 0 **to** 0	
Volts **to**			**Background Current:** N/A	
Fuel Gas: N/A **Flame:** N/A			**Braze temp. °F** N/A **to**	

WELDING TECHNIQUE: **For fabrication specific requirements sucg as fittup, cleaning, grinding, PWHT and inspection criteria refer to Volume 2, Welding Fabrication**

Technique: Manual   **Cleaning Method:**   Chip, Wire brush, Grind

Single Pass or Multi Pass: M   **Stringer or Weave bead (S/W):** S/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:** Variable   **Gas Cup Size:** N/A

PROCEDURE QUALIFIED FOR:

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

Comments: If Charpy's are required user must verify impact values, and required heat input prior to use.

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzel Angle	Other
1	SMAW	E-3XX-xx	3/32	70 **to** 95	**to**	2 **to** 6	0 **to** 0	
2	SMAW	E-3XX-xx	1/8	125 **to** 160	**to**	**to**		
3	SMAW	E-3XX-xx	5/32	140 **to** 205	**to**	**to**		
4								
5	SMAW	E-3XX-xx		**to**	**to**	**to**		
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.