WELDING PROCEDURE SPECIFICATION

WPS - 7000-PVDF **REV. NO.:** 1 **DATE:** 2/21/2006 ****APPLICABILITY****

WELDING PROCESS: TF **and** TF **ASME:** **AWS:** **OTHER:** ANSI B31.3 Ch. VII

SUPPORTING PQR: Z/P Z-1-G 7000-TF-PVDF

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: Square Butt **Class:** Thermal fusion melt

See GWS 1-06 and WFP's for joint details **Preparation:** Emery cloth to roughen and remove surface film

Root Opening: 0.0 **Backing:** None

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

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

FILLER METALS: **Class:** N/A **and** N/A

A No: N/A **SFA Class:** N/A **and** **F No:** N/A **and** N/A **Size:** .125 .187 .250

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

Flux: Type: N/A **Size:** N/A **AWS Root Pass:** 0 **thru** 0

Filler Metal Note: Manual hand fed filler material is same as base material

AWS Balance: 0.000 **thru**

ASME Root Pass: 0.125 **thru** 1.5

ASME Balance: 0.000 **thru** 0.000

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

Spec. PVDF **Grade:** All **to: Spec.** PVDF **Grade:** All

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

Qualified Thickness Range: **AWS:** 0.000 **thru** 0.000 **ASME:** 0.125 **thru** 1.500

QUALIFIED POSITIONS: **AWS:** N/A **ASME:** ANSI - All **Vert. Prog.:** 360°

Preheat Min. Temp.: 490 **°F** **GAS: Shielding:** N/A **or** N/A

Interpass Max. Temp.: 510 **°F** **Gas Composition:** 0 / 0 / 0 **%** 0 / 0 / 0 **%**

Preheat Maintenance: 510 **°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 o **°F** **Trailing Gas/Comp:** N/A 0 **%**

APPROVAL: Signatures on file at ENG **DATE:** 2/22/2006

WELDING CHARACTERISTICS:

Current: N/A **and** N/A **Tungsten Type:** N/A **Transfer Mode:** N/A

Ranges: Amps 0 **to** 0 **Tungsten Dia.:** 0 **Pulsing Cycle:** N/A **to** N/A

Volts 0 **to** 0 **Background Current:** N/A

Fuel Gas: N/A **Flame:** N/A **Braze temp. °F** 0 **to** 0

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

Technique: Machine/Manual **Cleaning Method:** Clean lint free rags/fine Crocus

Single Pass or Multi Pass: S **Stringer or Weave bead (S/W):** N/A **Oscillation:** 0

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

No Pass S>1/2": N/A **GMAW/FCAW Tube to work distance:** N/A

Maximum K/J Heat Input: N/A **Travel speed:** N/A **Gas Cup Size:** N/A

PROCEDURE QUALIFIED FOR:

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

Comments: This WPS Thermal Fusion procedure also includes Plastic Weld for hand fed filler with hot air gun temperatures of ~400° F to ~560° F. Use piping manufacturer heating and joining equipment or a manufacturer approved equivelant. Heating and cooling times shall shall be in accordance with the piping/fitting manufacturer requirements. WPS Data sheets will added for each type of plastic pipe, i.e., PVDF that fall within the jurisdiction of B31.3 Ch. VII and are performed within the

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzle Angle	Other
1	TF	N/A	.125	0 to 0	0 to 0	0 to 0	0 to 0	
2	TF	N/A	.187	0 to 0	0 to 0	0 to 0		
3	TF	N/A	.250	0 to 0	0 to 0	0 to 0		
4	TF	N/A		0 to 0	0 to 0	0 to 0		
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.

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 posession and use of LANL procedures and qualifications.