WELDING PROCEDURE SPECIFICATION

WPS - 3001-1-SC  REV. NO.: 2  DATE: 3/13/2007  **APPLICABILITY**

WELDING PROCESS:  GMAW-SC and GMAW-SC  ASME: X  AWS: X  OTHER: 


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 - AWS B-Ua or BU2  Class: Full/Partial Penetration
See GWS 1-06 and WFP's for joint details  Preparation: Thermal/Mechanical
Root Opening:  1/16 - 1/8  Backing: Metal
Backgrind root:  Double sided joints  Backing Mat.: CS when used
Bkgd Method:  Grind/arc gouge  GTAW Flux: N/A  Backing Retainer: N/A

FILLER METALS

A No: 1  SFA Class: 5.18 an 5.18  F No: 6 an 6  Size: .035 .035 .035 .035
Insert: N/A  Insert Desc: N/A

Flux Type: N/A  Size: N/A
Filler Metal Note: Filler wire dia. Limited to .035" only. Wire with "GS"suffix shall not be used.

Weld Metal Thickness Ranges:

AWS Root Pass: 0.065 thru 0.187  ASME Root Pass: 0.065 thru 0.187
ASME Balance: 0.065 thru 0.649

BASE MATERIAL

Spec. ≤ .030 C CS- Pipe, plate, sheet & stri  Grade: All  to: Spec. ≤ .030 C CS- Pipe, plate, sheet & stri  Grade: All
Qualified Pipe Dia. Range: ≥ 4 ASME: 0.5
Qualified Thickness Range: AWS: 0.125 thru 0.750 ASME: 0.065 thru 0.649

QUALIFIED POSITIONS:

AWS: All  ASME: All  Vert. Prog.: not V/DN Rem. Up

Preheat Min. Temp.: 70 °F  GAS: Shielding: CO2 or N/A
Interpass Max. Temp.: 500 °F  Gas Composition: 100 / 0 / 0 % 0 / 0 / 0 %
Preheat Maintenance: 70 °F  Gas Flow Rate cfh: 20 to 35 0 to 0
PWHT: Time @ °F Temp. 0  Backing Gas/Comp: N/A 0 %
Temp. Range: 0 °F  Backing Gas Flow cfh: 0 to 0
 to 0 °F  Trailing Gas/Comp: 0 0 %


WPS NO: 3001-1-SC

WELDING CHARACTERISTICS:

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Current: DCEP and DCEP
Ranges: Amps 115 to 200
Volts 18 to 26
Fuel Gas: N/A

Tungsten Type: N/A
Tungsten Dia.: N/A
Background Current: 0

Transfer Mode: Short Circuit
Pulsing Cycle: 0 to 0

Braze temp. °F 0 to

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

**Technique:** Semiautomatic/Automatic
**Cleaning Method:** Wire Brush, File, Grind
**Oxidation:** N/A

**Single Pass or Multi Pass:** M
**Stringer or Weave bead (S/W):** S
**Forehand or Backhand for GMAW (F/B):** BH root/FH

**GMAW Gun Angle °:** 5 to 15
**GMAW/FCAW Tube to work distance:** 3/8 - 1/2

**No Pass >1/2":** True
**Maximum K/J Heat Input:** 0
**Travel speed:**

**Gas Cup Size:** 1/2 - 5/8

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**PROCEDURE QUALIFIED FOR:**

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

**Comments:** (1) Fillet weld sizes limited to 1/2" with SC process. (2) This WPS is qualified for AWS D9.1 using thicknesses from 18 - 11 gauge for fillets in all positions.

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**Weld Layer** | **Manual Process** | **Filler Metals** | **Size** | **Amp Range** | **Volt Range** | **Travel/ipm** | **Nozzle Angle** | **Other**
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1 | GMAW-SC | ER70S-x | .035 | 115 to 130 | 18 to 22 | 6 to 12 | 5 to 15 |
2 | GMAW-SC | ER70S-x | .035 | 125 to 200 | 20 to 26 | 12 to 20 |
3 | GMAW-SC | ER70S-x | .035 | 125 to 200 | 20 to 26 | 12 to 20 |
4 | GMAW-SC | ER70S-x | .035 | 125 to 200 | 20 to 26 | 12 to 20 |
5 | GMAW-SC | ER70S-x | .035 | 125 to 200 | 20 to 26 | 12 to 20 |
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 possession and use of LANL procedures and qualifications.