WELDING PROCEDURE
SPECIFICATION

WPS: 1000-XXXX-1grp3
REV. NO.: 0
DATE: 2/18/2020
**APPLICABILITY**

WELDING PROCESS: SMAW and SMAW
CODE: ASME IX and Sec. VIII Div 3
OTHER:

SUPPORTING PQR: 1000-XXXX-1grp3

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 Penetration & Fillet Welds

See GWS 1-06 and WFP's for joint details.

Preparation: Clean and prep per manufacturer's instructions

Root Opening: N/A
Backgrind Root: Double sided joints
Bkgrd Method: Gouge, Chip, Grind

GTAW Flux: N/A
Backing Retainer: No

FILLER METALS:

Class: E8018 and E8018
A No: 3
F No: 4 and 4

SFA Class: 5.5 and 5.5
Size: 3/32 1/8 3/32 1/8

Weld Metal Thickness Ranges:
AWS Root Pass: ASME Balance: 0.125 thru 8.00
ASME Root Pass: ASME Balance: 0.187 thru 8.00

BASE MATERIAL:

Spec.: A-537 Class 2
Grade: 3

P No.: 1
Gr No.: 3
to P No.: 1
Gr No.: 3
to Spec.: A-537 Class 2
Grade: 3

Qualified Thickness Range:
AWS: 0.125 thru 8
ASME: 0.187 thru 8

QUALIFIED POSITIONS:

AWS: 1G, 2G, 3G
Vert. Prog.: Up

Preheat Min. Temp.: 275
Interpass Max. Temp.: 400 °F
Preheat Maintenance: 275 °F
PWHT: Time @ °F Temp.: N/A
Temperature Range: N/A °F to N/A °F

GAS: Shielding: N/A or N/A
Gas Composition: N/A / N/A / N/A %
Gas Flow Rate cfm: 0 to 0
Backimg Gas Flow Rate cfm: 0 to 0
Backimg Gas Flow Rate cfm: N/A

N/A %
N/A %

WELDING CHARACTERISTICS:

Current: DCEP and DCEP
Ranges: Amps: 70 to 160
Volts: 16 to 20

Tungsten Type: N/A
Tungsten Dia.: N/A to N/A

Transfer Mode: N/A
Pulsing Cycle: N/A to N/A
Background Current: N/A

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 fitup, cleaning, grinding, PWHT and inspection criteria, refer to Volume 2, Welding Fabrication Procedures.

Technique: Manual
Cleaning Method: Chip/grind/file/wire brush

Single or Multi Pass: S or M
Stringer or Weave Bead (S/W): S/W or S/W
GMW Gun Angle: Forehand or Backhand for GMW: N/A
Oscillation: 2X

No Pass > 1/2": Yes
GMW/FCAW Tube to Work Distance (in): N/A

Maximum K/J Heat Input: 45 KJ/in
Travel Speed: Gas Cup Size: N/A

PROCEDURE QUALIFIED FOR:
Charpy "V" Notch: Yes
Nil-Ductile Transition Temperature: No
Dynamic Tear: No

Comments: Charpy qualified for 33 ftlbs @ -40 F

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<th>Manual Process</th>
<th>Filler Metals</th>
<th>Size</th>
<th>Amp Range</th>
<th>Volt Range</th>
<th>Travel/IpM</th>
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<td>70 to 100</td>
<td>16 to 19</td>
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<td>2</td>
<td>SMAW</td>
<td>E8018</td>
<td>1/8</td>
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REM. * Weld layers are representative only - actual number of passes and layer sequence may vary.

ML-1/2 projects or jobs must determine if the supporting documentation for this WPS complies with quality requirements of the project/job.

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 the reason of Subcontractor's and their employees possession and use of LANL procedures and qualifications.

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DATE: 2/13/2020

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Date: 2/13/2020

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