WELDING PROCEDURE
SPECIFICATION

WPS- 3503-8  REV. NO.: 0  DATE: 9/1/2004  **APPLICABILITY**
WELDING PROCESS/ES  GMAW-F and GMAW-F
ASME: X  AWS: X
SUPPORTING PQ  353-8

**APPLICABILITY**
ASME:  AWS:  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  Class: Full or Partial Penetration
See GWS 1-06 for details
Root Opening:  Preparation: Mechanical
Backgrind root: Y  Backing: With/Without
Bkgrd Method:  Backing Mat.:

FILLER METALS:
A No: 8  SFA Class: 5.22 and .  F No: 6 and 0  Size: 1/16 1/16 1/16
Insert: N  Insert Desc.: N/A
Flux: Type: NA  Size: 0  Weld Metal Thickness Range:
Filler Metal Note:

BASE MATERIAL
Spec. ASTM A-240  to: Spec. ASTM A-240
Pipe Dia Range: Groove > 4
Thickness Range: Groove : AWS: 0.187 thru 8.000  ASME: 0.187 thru 2.000

QUALIFIED POSITIONS
All  Vertical Progression: Up
Preheat Min. Temp.: 50 F  GAS: Shielding: A/CO2 or
Interpass Max. Temp.: 350 F  Gas Composition: 75 % 25 % 0 %
Preheat Maintenance: 50 F  Gas Flow Rate cfm 25 to 50
Back ing Gas/Comp: %
PWHT: Time @ F Temp. 0  Backing Gas Flow cfm 0 to 0
Temp. Range: 0 F to 0 F  Trailing Gas/Comp: %

PREPARED BY  Kelly Bingham  DATE: 3/30/2004
Signature on file at FWO-DECS

APPROVED BY  Tobin Oruch  DATE: 9/1/2004
Signature on file at FWO-DECS

Note: For SC/SS/ML-1/ML-2 work, this WPS requires independent review.
WPS NO: 3503-8

WELDING CHARACTERISTICS:

<table>
<thead>
<tr>
<th>Current:</th>
<th>DCEP and DCEP</th>
<th>Tungsten type:</th>
<th>N/A</th>
<th>Transfer Mode:</th>
<th>Globular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranges:</td>
<td>Amps 250 to 280</td>
<td>Volts 24 to 28</td>
<td></td>
<td>Pulsing Cycle:</td>
<td>0 to 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Background Current:</td>
<td>0</td>
</tr>
<tr>
<td>Fuel Gas:</td>
<td>N/A</td>
<td>Flame:</td>
<td>N/A</td>
<td>Braze temp. F:</td>
<td>0 to 0</td>
</tr>
</tbody>
</table>

WELDING TECHNIQUE:

For cleaning, grinding, and inspection criteria refer to Volume 2, Welding Fabrication Procedures

<table>
<thead>
<tr>
<th>Technique:</th>
<th>Manual</th>
</tr>
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<tbody>
<tr>
<td>Cleaning Method:</td>
<td></td>
</tr>
<tr>
<td>Stringer or Weave bead (S/W):</td>
<td>S</td>
</tr>
<tr>
<td>Oscillation:</td>
<td>N</td>
</tr>
<tr>
<td>Forehand or Backhand for GMAW (F/B):</td>
<td>FB</td>
</tr>
</tbody>
</table>

GMAW Gun Angle °:

5 to 15

Maximum K/J Heat Input:

50000

Travel speed/ipm:

10 to 15

Gas Cup Size:

PROCEDURE QUALIFIED FOR:

<table>
<thead>
<tr>
<th>Charpy &quot;V&quot; Notch:</th>
<th>N</th>
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<tbody>
<tr>
<td>Nil-Ductil Transition Temperature:</td>
<td>N</td>
</tr>
<tr>
<td>Dynamic Tear:</td>
<td>N</td>
</tr>
</tbody>
</table>

Comments:

REM. * Weld layers are representative only - actual number of passes and layer sequence may vary due to variations in joint design, thickness and fitup.

Weld Layer | Manual Process | Filler Metals | Size | Amp Range | Volt Range | Travel ipm | Nozzel Angle | Other |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>GMAW-FC</td>
<td>E308LT-1</td>
<td>1/16</td>
<td>250 280</td>
<td>24 28</td>
<td>10 15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GMAW-FC</td>
<td>1/16</td>
<td>250 280</td>
<td>24 28 10 15</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
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Wednesday, September 22, 2004