



# Fermi National Accelerator Laboratory

Technical Division-Machine Shop

<b>Procedure Qualification Record</b>	<b>No. Fermi PQR SS-10-001</b>	<b>Date:</b> 10/20/2010
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<b>Revision:</b> <b>Date:</b> <b>Remarks:</b>	<b>Welding Process/Weld Type:</b> GTAW/Manual	<b>In accordance with:</b> Fermi WPS SS-10-001
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<b>Joints (QW-402)</b>	<b>Details:</b>										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td><b>Weld Type:</b></td><td>Square Butt Groove</td></tr> <tr><td><b>Backing:</b></td><td>Argon Gas</td></tr> <tr><td><b>Root Opening:</b></td><td>None</td></tr> <tr><td><b>Root Face:</b></td><td>0.028"</td></tr> </table>	<b>Weld Type:</b>	Square Butt Groove	<b>Backing:</b>	Argon Gas	<b>Root Opening:</b>	None	<b>Root Face:</b>	0.028"	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"><b>Joint Details:</b></td> <td style="width: 70%;"> <p style="text-align: center;">SA 213 .028" x .125"Ø 304/304L Autogenous</p> </td> </tr> </table>	<b>Joint Details:</b>	<p style="text-align: center;">SA 213 .028" x .125"Ø 304/304L Autogenous</p>
<b>Weld Type:</b>	Square Butt Groove										
<b>Backing:</b>	Argon Gas										
<b>Root Opening:</b>	None										
<b>Root Face:</b>	0.028"										
<b>Joint Details:</b>	<p style="text-align: center;">SA 213 .028" x .125"Ø 304/304L Autogenous</p>										

<b>Base Metals (QW-403)</b>	<b>Post Weld Heat Treatment (QW-407)</b>
<b>Material Spec., Type or Grade:</b>	<b>Type:</b> <u>No PWHT performed</u>
SA213, Type 304/304L <b>To</b> SA213, Type 304/304L	<b>Temperature:</b> <u>Not Used</u>
P8, Group I <b>to</b> P8, Group I	<b>Time:</b> <u>Not Used</u>
<b>Thickness of Coupon (in.):</b> 0.028"	
<b>Diameter of Test Coupon (in.):</b> 0.125"Ø	

<b>Filler Metals (QW-404)</b>	<b>Gas (QW-408)</b>
<b>SFA Specification:</b> Autogenous	<b>Percent Composition</b>
<b>AWS Classification:</b>	<b>Gas:</b> Argon <b>Mixture%:</b> 99.99% <b>Flow Rate:</b> 1 CFH
<b>Filler Metal F-No.:</b>	<b>Shielding:</b> Argon <b>Trailing:</b> None
<b>Weld Metal Analysis A-No.:</b> 8	<b>Backing:</b> Argon <b>Flow Rate:</b> 1 CFH
<b>Size of Filler Metal (in.):</b>	<b>Other:</b> <u>Maintain purge throughout weld</u>
<b>Weld Deposit "t"(in.):</b> .028	
<b>Filler Metal Product Form:</b>	

<b>Positions (QW-405)</b>	<b>Electrical Characteristics (QW-409)</b>
<b>Position of Joint:</b> 6G	<b>Current/Polarity:</b> <u>DCEN</u>
<b>Weld Progression:</b> Upward	<b>Amps:</b> 20 <b>Volts:</b> 10-12
<b>Other:</b>	<b>Tungsten Type &amp; Size:</b> 0.040"Ø
	<b>Other:</b> <u>Non-Pulsing Current</u>

<b>Preheat (QW-406)</b>	<b>Technique (QW-410)</b>
<b>Preheat Temperature:</b> 50 ° F Minimum	<b>Travel (ipm):</b> <u>As Required</u> <b>Oscillation:</b> <u>None</u>
<b>Interpass Temperature:</b> 350° F Maximum	<b>String/Weave Bead:</b> <u>Stringer</u>
<b>Minimum Weld Temp.</b> 50° F	<b>Multiple/Single Pass (per side):</b> <u>Single</u>
	<b>Multiple/Single Electrode:</b> <u>Single Electrode</u>
	<b>Nozzle/Gas Cup Size:</b> #6

Use of Fermilab Welding Procedures and Welder Qualifications for non-Fermilab work shall be at the sole risk and responsibility of the Subcontractor, and the Subcontractor shall indemnify and save Fermilab 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 Fermilab procedures and qualifications.



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Technical Division-Machine Shop

**Procedure Qualification Record**

**No. Fermi PQR SS-10-001**

Date: 10/20/2010

Welding Process/Weld Type: GTAW/Manual

WPS No. Fermi WPS SS-10-001

### Tensile Test (QW-150)

Specimen No.	Dimensions	Area (Squared in.)	Area (in)	0.20%YS (psi)	Ultimate Stress (PSI)	% E1	% RA	Comments
001	0.1250 x 0.690	0.0085	1.00	44,700	86,200	30.0	N/A	Weld

### Guided Bend Test (QW-160)

Figure Number & Type	Result	Figure Number Type	Result
QW-462.3 (a) Face Bend	Pass	QW-462.3 (a) Root Bend	Pass
QW-462.3 (a) Face Bend	Pass	QW-462.3 (a) Root Bend	Pass

Welder's Name : Daniel Watkins	ID : #03991N	Weld Stamp : W-24
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Visual Examination: <u>Acceptable</u>	X-ray per ASME Section IX, QW-191.2
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Verification of Weld By: Michael Reynolds	<i>Michael Reynolds</i>	Verification # 9102010-2-MR	9/10/2010
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Radiography Conducted By: <u>Not Used</u>	Date:
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Tests Conducted by: <u>Exova Inc.</u>	Ref. #T017727	Date: 10/20/2010
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We certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Code.

PQR prepared by: Fermi National Accelerator Laboratory

Authorized Representative *Greg Altella 00362N* Date: 10/20/2010

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