

SSTD-8070-0015-WELD  
Rev. D  
DECEMBER 2025

National Aeronautics and  
Space Administration

**John C. Stennis Space Center**  
Stennis Space Center, MS 39529-6000

# COMPLIANCE IS MANDATORY

## John C. Stennis Space Center GAS TUNGSTEN ARC WELD (GTAW) PROCEDURE FOR CARBON STEEL (ASME P-No. 1, GROUP 1 OR 2)

### Approved in DDMS by:

<u>Scott Olive</u>	<u>12-3-2025</u>
NASA SSC Center Operations	Date
Facilities Engineering	
Test Complex Support	

### Concurrence in DDMS by:

<u>Gina Ladner</u>	<u>12-3-2025</u>
NASA SSC Center Operations	Date
Directorate Facilities Services	

<u>Steven Taylor</u>	<u>12-4-2025</u>
NASA SSC Engineering & Test Directorate	Date

<u>Son Le</u>	<u>12-11-2025</u>
NASA SSC Safety & Mission Assurance	Date

<b>Issued by</b>	
<u>ISSUED CEF</u>	<u>12-12-2025</u>
Central Engineering Files	Date

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	Review Date:	December 5, 2030
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Responsible Office: NASA SSC Center Operations Facilities Engineering Test Complex Support		
<b>SUBJECT: GTAW Procedure for Carbon Steel (ASME P-No. 1, Group 1 or 2)</b>		

## Document History Log

Revision	Date	Originator/ Phone	Description
Basic	04.03.2012	Doug Dike Ext. 8-2803	Initial release. Supersedes SSC-34-008.
A	10.22.2015	Doug Dike Ext. 8-2803	References and acronyms updated. Revised cover sheet to reflect approval by NASA SSC Center Operations Design & Construction Project Management Division; and concurrence by NASA SSC Center Operations Directorate Operations and Maintenance Division, NASA SSC Engineering & Test Directorate, and NASA SSC Safety & Mission Assurance. WPS/PQR attachments clarified.
A-1	08.15.2017	George Smith 8-7680	Administrative changes to attachments to change contractor from FOSC to SACOM.
B	04.20.2020	Benny McGrath Ext. 8-2969	Five-year revision. Updated directorate titles on cover sheet as necessary. Updated references and acronyms. Minor administrative changes. 5.0-b: Added, "and in accordance with ASME Boiler and Pressure Vessel Codes, Section IX, requirements." 5.0-c: Revised to reflect deletion of attached Welder Performance Qualification. 8.4 and 8.5: Deleted Welder Performance Qualifications. Updated WPS to SSC-937.
B-1	05.12.2020	Carol Wolfram 8-1620	Administrative Change. Header effective/review dates updated.
C	01.11.2021	Benny McGrath Ext. 8-2969	WPS updated: Non-essential variable, Position of Groove, changed from "1G" to "ALL".

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D	12.5.2025	Don Caudill Ext. 8-3337	Five-year plan. Updated references and acronyms. 5.0-e: Replace “Inspection” with “Examination.” 8.1: Welding Procedure Specification (WPS) updated to reflect NASA approval. 8.2: Procedure Qualification Record updated to reflect NASA approval.
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## 1.0 PURPOSE

This John C. Stennis Space Center (SSC) standard (SSTD) provides for a qualified American Society of Mechanical Engineers (ASME) weld procedure of Gas Tungsten Arc Welding (GTAW) of carbon steel pipe or plate for 0.1875” to 1.50” wall thickness using argon as a backing gas.

## 2.0 APPLICABILITY

This SSTD is valid for welding of all carbon steel pipe or plate that will be used in, but not limited to, nitrogen, helium, air, and hydrogen service. This SSTD applies to all contractor and subcontractor personnel involved with the welding of carbon steel pipe.

## 3.0 REFERENCED AND APPLICABLE DOCUMENTS

Applicable documents shall be the latest version unless otherwise specified.

ASME Boiler and Pressure Vessel Codes, Section IX, *Welding, Brazing, and Fusing Qualifications*

SPR 1440.1, *SSC Records Management Program Requirements*

SPR 8715.1, *SSC Safety and Health Program Requirements*

SSTD-8070-0005-CONFIG, *Preparation, Review, Approval and Release of SSC Standards*

SSTD-8070-0013-WELD, *Classes of Welding Inspection*

SSTD-8070-0014-WELD, *Qualifying Welders and Welding Procedures*

## 4.0 RESPONSIBILITIES

Responsibilities for the use and control of this SSTD and for the review and approval of revisions or cancellation of this SSTD shall be as specified in SSTD-8070-0005-CONFIG and the applicable documents referenced therein.

## 5.0 REQUIREMENTS AND PROCEDURES

- a. All procedures shall be performed in compliance with applicable requirements in SPR 8715.1. If ever there is a conflict between this SSTD and the SPR, the SPR takes precedence.
- b. Items denoted as essential variables in the attached weld procedure specifications (WPS) shall not be altered when using the WPS. An alternate WPS may be used only if approved prior to use by the NASA SSC Center Operations Facilities Engineering Test Complex Support, the NASA SSC Engineering and Test Directorate, the NASA SSC Safety and Mission Assurance Office, and in accordance with ASME Boiler and Pressure Vessel Codes, Section IX, requirements.

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- c. The attached Procedure Qualification Record (PQR), NASA 300-1, is from the original WPS in this SSTD. When performing a new welder performance qualification (WPQ) or a new WPS, these documents shall be completed showing all pertinent data and results of the approved weld PQR.
- d. Welders shall be qualified in accordance with SSTD-8070-0014-WELD.
- e. Examination methods for welds shall be in accordance with SSTD-8070-0013-WELD.
- f. Qualification tests shall be performed on test coupons welded with argon as the backing gases.

## 6.0 RECORDS AND FORMS

- a. Records required by the procedures of this SSTD shall be maintained in accordance with SPR 1440.1 and as specified in this SSTD.
- b. All records and forms are the latest version unless otherwise indicated.
- c. Forms may be obtained from the SSC Electronic Forms repository or from the NASA SSC Forms Management Officer. Quality Records are identified in the SSC Master Records Index.
- d. The original, signed WPS and PQR (copies of which are provided in Attachment A of this SSTD) and the accompanying Certificate(s) of Analysis validation test documents shall be maintained in Central Engineering Files (CEF).

## 7.0 ACRONYMS & ABBREVIATIONS


ASME	American Society of Mechanical Engineers
CEF	Central Engineering Files
GTAW	Gas Tungsten Arc Weld
"	Inch
NASA	National Aeronautics and Space Administration
PQR	Procedure Qualification Record
SPR	John C. Stennis Space Center Procedural Requirement
SSC	John C. Stennis Space Center
SSTD	John C. Stennis Space Center Standard
WPQ	Welder Procedure Qualification
WPS	Weld Procedure Specifications

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## 8.0 ATTACHMENTS

### 8.1 Welding Procedure Specification

 National Aeronautics and Space Administration John C. Stennis Space Center Stennis Space Center, MS 39529-6000		<b>ASME - WELDING PROCEDURE SPECIFICATIONS (WPS)</b>																																					
Welding Procedure Specification Record Number SSTD-8070-0015-WELD		Date September 12, 2025	Revision Number 4																																				
Qualified To ASME Boiler and Pressure Vessel Code		Company Name NASA																																					
Supporting PQR(s) SSTD-8070-0015-WELD (A)		Reference Docs. SSTD-8070-0015-WELD																																					
Scope GTAW for Carbon Steel		Joint Single V Groove, Double V Groove																																					
<b>BASE METALS</b>		<b>THICKNESS RANGE QUALIFIED</b>																																					
Type	Carbon Steel	P-no.	P-1	Grp-no.	1 or 2																																		
Welded To	Carbon Steel	P-no.	P-1	Grp-no.	1 or 2																																		
Backing	Not Permitted	P-no.		Grp-no.																																			
Retainers																																							
Notes																																							
		<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">As-welded</th> <th colspan="2">With PWHT</th> </tr> <tr> <th>Min.</th> <th>Max.</th> <th>Min.</th> <th>Max.</th> </tr> </thead> <tbody> <tr> <td>Complete Pen.</td> <td>0.1875</td> <td>1.50</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Complete Pen.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Impact Tested</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Impact Tested</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Fillet Welds</td> <td>All</td> <td></td> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>					As-welded		With PWHT		Min.	Max.	Min.	Max.	Complete Pen.	0.1875	1.50	N/A	N/A	Complete Pen.					Impact Tested					Impact Tested					Fillet Welds	All		N/A	N/A
	As-welded		With PWHT																																				
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Fillet Welds	All		N/A	N/A																																			
		<b>DIAMETER RANGE QUALIFIED</b>																																					
Nominal Pipe Size		All																																					
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	Min.	Max.	Min.	Max.																																			
			N/A	N/A																																			
<b>FILLER METALS</b>		<b>THICKNESS RANGE QUALIFIED</b>																																					
Process	SFA	Classification	F-no.	A-no.	Chemical Analysis or Trade Name																																		
GTAW	5.18	ER70S-2	6	1																																			
Cons. Insert	N/A																																						
Flux	N/A																																						
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	As-welded		With PWHT																																				
	Min.	Max.	Min.	Max.																																			
	0.1875	1.50	N/A	N/A																																			
<b>WELDING PROCEDURE</b>																																							
Welding Process	GTAW																																						
Type	Manual																																						
Minimum preheat/interpass temperature (°F)	50 F ( See Note A.)																																						
Maximum interpass temperature (°F)	300 F Max.																																						
Tungsten Size	1/16" - 1/8"																																						
Tungsten Type	2% Thoriated ( See Note B.)																																						
Filler Metal Size (in.)	1/16" - 5/32"																																						
Layer Number	1 - Cap																																						
Position of Groove	ALL																																						
Weld Progression	N/A																																						
Current/Polarity	DCEN																																						
Amperes	100-220																																						
Volts	8 - 25																																						
Travel Speed (in./min)	2-8 ipm																																						
Maximum Heat Input (kJ/in)																																							
DC Pulsing Current																																							
Shielding: Gas Type	Argon > 99.9% (See Note C.)																																						
Flow Rate (cfh)	10-60 CFH																																						
Trailing: Gas Type	N/A																																						
Flow Rate (cfh)	N/A																																						
Backing: Gas Type	Argon > 99.9% (See Note D.)																																						
Flow Rate (cfh)	10-60 CFH																																						
String or Weave	String or Weave																																						
Orifice/Gas Cup Size	1/4" - 3/4"																																						
Multi/Single Pass per Side	Multiple																																						
Weld Deposit Chemistry																																							
Notes	See Note E.																																						



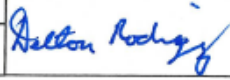

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 National Aeronautics and Space Administration John C. Stennis Space Center Stennis Space Center, MS 39529-6000		<b>ASME - WELDING PROCEDURE SPECIFICATIONS (WPS)</b>	
Welding Procedure Specification Record Number SSTD-8070-0015-WELD		Date September 12, 2025	Revision Number 4
Qualified To ASME Boiler and Pressure Vessel Code		Company Name NASA	
<b>BASE METALS</b> Peening <u>Not allowed</u> Surface Preparation <u>See Note F.</u> Initial/Interpass Cleaning <u>Brushing or Grinding</u> Back Gouging Method <u>N/A</u>			
<b>POSTWELD HEAT TREATMENT</b> Temperature <u>None</u> Time and Temperature <u>None</u> Other <u>None</u>			
<b>NOTES</b> A. Preheat maintenance as needed. B. Tungsten should maintain a pencil point. C. High flow of shielding gas flow over molten puddle is required to eliminate nitrogen absorption from atmosphere. D. Minimum 10 minutes of back purge prior to welding. E. Contact tube to work distance 3/4" max. F. Remove all contamination and water from surface. Clean weld and adjacent base metal using steel brushes or grinding.			
<b>Signature 1</b> Engineer Name Larry deQuay Date September 12, 2025		<b>Signature 2</b> Quality Name September 12, 2025 Date Delton Rodriguez	
Signature 		Signature 	
<b>Signature 3</b> Customer Reviewer Name Son Le Date September 12, 2025		<b>Signature 4</b> Customer Name Date	
Signature 		Signature	

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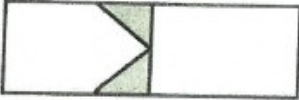


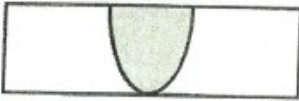
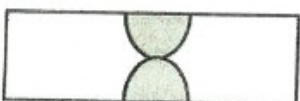
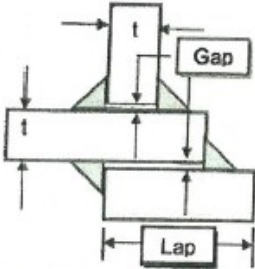
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John C. Stennis Space Center  
Stennis Space Center, MS 39529-6000

**ASME - WELDING PROCEDURE SPECIFICATIONS (WPS)**

Welding Procedure Specification Record Number SSTD-8070-0015-WELD	Date September 12, 2025	Revision Number 4
Qualified To ASME Boiler and Pressure Vessel Code	Company Name NASA	

**Weld Joint Designs**

**Attachment #1**

<b>Single-V Groove</b>	<b>Single-Bevel Groove</b>	<b>Double-V Groove</b>
		
Groove Angle: 50 to 75 deg Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Groove Angle: 37.5 to 45 deg Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Groove Angle: 60 to 75 deg Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.
<b>Double-Bevel Groove</b>	<b>Single-J Groove</b>	<b>Double-J Groove</b>
		
Groove Angle: 37.5 to 45 deg Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Groove Angle: 37.5 to 45 deg Groove Radius: 3/8 in. Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Groove Angle: 37.5 to 45 deg Groove Radius: 3/8 in. Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.
<b>Single-U Groove</b>	<b>Double-U Groove</b>	<b>Fillet Weld T or Lap</b>
		
Groove Angle: 50 to 75 deg Groove Radius: 3/8 in. Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Groove Angle: 50 to 75 deg Groove Radius: 3/8 in. Root Opening: 1/16 to 3/16 in. Root Face: 0 to 1/16 in. Misalignment: 1/16-in. max.	Gap: 1/16-in. max. / Lap: 5 x t or 1 in. min.

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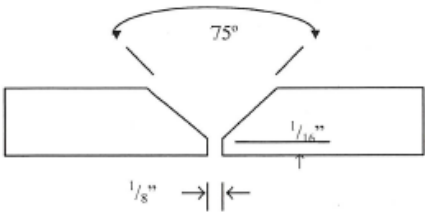
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## 8.2 Welding Procedure Qualification Record

Accepted by Syncom Space Services LLC  
 George E. Smith 8/14/2017  
 Stephen A. Koch 2/14/2017  
 INSPECTION SPECIALISTS, INC.  
 MECHANICAL TESTING LABORATORY DIVISION

Accepted by NASA  
 Laura di Quoy 1/14/2025  
 See 11/17/2025

PROCEDURE QUALIFICATION RECORD (PQR)  
 (See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code)  
 Record Actual Conditions Used to Weld Test Coupon.

Company Name <u>Jacobs Technology</u>																	
Procedure Qualification Record No. <u>SSTD-8070-0015-WELD(A)</u>	Date <u>10/11/11</u>																
WPS No. <u>SSTD-8070-0015-WELD</u>																	
Welding Process(es) <u>GTAW</u>																	
Types (Manual, Automatic, Semi-Auto.) <u>Manual</u>																	
JOINTS (QW-402)  <p style="text-align: center;">Groove Design of Test Coupon          (For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used.)</p>																	
BASE METALS (QW-403) Material Spec. <u>ASTM A-36</u> Type or Grade <u>A-36</u> P-No. <u>1</u> to P-No. <u>1</u> Thickness of Test Coupon <u>0.750"</u> Diameter of Test Coupon <u>N/A</u> Other _____ _____ _____	POSTWELD HEAT TREATMENT (QW-407) Temperature <u>N/A</u> Time <u>N/A</u> Other _____ _____ _____																
FILLER METALS (QW-404) SFA Specification <u>5.18</u> AWS Classification <u>ER70S-2</u> Filler Metal F-No. <u>6</u> Weld Metal Analysis A-No. <u>1</u> Size of Filler Metal <u>3/32" - 1/8"</u> Other _____ _____ Deposited Weld Metal <u>0.750"</u>	GAS (QW-408) <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>Gas(es)</th> <th>Percent Composition (Mixture)</th> <th>Flow Rate</th> </tr> </thead> <tbody> <tr> <td>Shielding</td> <td>Argon</td> <td>99.9</td> <td>20-60 CFH</td> </tr> <tr> <td>Trailing</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Backing</td> <td>Argon</td> <td>99.9</td> <td>20-60 CFH</td> </tr> </tbody> </table>		Gas(es)	Percent Composition (Mixture)	Flow Rate	Shielding	Argon	99.9	20-60 CFH	Trailing	N/A	N/A	N/A	Backing	Argon	99.9	20-60 CFH
	Gas(es)	Percent Composition (Mixture)	Flow Rate														
Shielding	Argon	99.9	20-60 CFH														
Trailing	N/A	N/A	N/A														
Backing	Argon	99.9	20-60 CFH														
POSITION (QW-405) Position of Groove <u>1G</u> Weld Progression (Uphill, Downhill) <u>N/A</u> Other _____ _____ _____	ELECTRICAL CHARACTERISTICS (QW-409) Current <u>DC</u> Polarity <u>EN</u> Amps. <u>140 - 204</u> Volts <u>15.1 - 20.2</u> Tungsten Electrode Size <u>1/8"</u> Other _____ _____ _____																
PREHEAT (QW-406) Preheat Temp. <u>50°F Min.</u> Interpass Temp. <u>176°F - 273°F</u> Other _____ _____ _____	TECHNIQUE (QW-410) Travel Speed <u>3-5 IPM</u> String or Weave Bead <u>String &amp; Weave</u> Oscillation <u>N/A</u> Multipass or Single Pass (per side) <u>Multipass</u> Single or Multiple Electrodes <u>Single</u> Other _____ _____ _____																

*Travis D. Wood*

*Ray M. Butcher*  
10-14-11

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QW-483 (Back)

PQR No. SSTD-8070-0015-WELD(A)

Tensile Test (QW-150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load lb	Ultimate Unit Stress psi	Type of Failure & Location
6438.90-T1	0.747"	0.725"	0.5416"	43,596	80,495	Base
6438.90-T2	0.754"	0.724"	0.5459"	43,090	78,934	Base

Guided-Bend Tests (QW-160)

Type and Figure No.	Result
6438.90-S1 Side Bend QW-462.2	Acceptable
6438.90-S2 Side Bend QW-462.2	Acceptable
6438.90-S3 Side Bend QW-462.2	Acceptable
6438.90-S4 Side Bend QW-462.2	Acceptable

Toughness Tests (QW-170)

Specimen No.	Notch Location	Notch Type	Test Temp.	Impact Values	Lateral Exp.		Drop Weight	
					% Shear	Mils	Break	No Break
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Fillet-Weld Test (QW-180)

Result - Satisfactory: Yes N/A No N/A Penetration into Parent Metal: Yes N/A No N/A  
 Macro - Results N/A

Other Tests

Type of Test N/A  
 Deposit Analysis N/A  
 Other N/A

Welder's Name Scott Harriel & WC King Soc. Sec. No. \_\_\_\_\_ Stamp No. \_\_\_\_\_  
 Tests conducted by: Inspection Specialists, Inc. - MTL Div. Laboratory Test No. 6438.90

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.


Manufacturer Jacobs Technology  
 Date October 11, 2011 *Travis G Moore* By *Benny M Salt* 10-14-11



*Accepted by Syncom Space Services LLC*  
*George E. Smith 8/14/2017*  
*Steph A Hoch 8/14/2017*

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**WELDER PERFORMANCE QUALIFICATION (WPQ)**  
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)

Welder's Name WC King Identification No. \_\_\_\_\_

**Test Description**

Identification of WPS followed SSTD-8070-0015-WELD  Test Coupon  Production Weld  
Specification of base metal(s) ASTM A-36 to ASTM A-36 Thickness 0.750"

**Testing Conditions and Qualification Limits**

Welding Variables (QW-305)	Actual Values	Range Qualified
Welding process(es) _____	GTAW	GTAW
Type (ie; manual, semi-auto) used _____	Manual	Manual
Backing (metal, weld metal, double-welded, etc.) _____	Without	With or Without
<input checked="" type="checkbox"/> Plate <input type="checkbox"/> Pipe (enter diameter if pipe or tube) _____	0.500"	2.875" – Unlimited
Base metal P- or S-Number to P- or S-Number _____	P1	P1-P11, P34, P41-P47 & S1
Filler metal or electrode specifications(s) (SFA) (info. Only) _____	E5.18	
Filler metal or electrode classification(s) (info. Only) _____	ER70S-2	
Filler metal F-Number(s) _____	F6	F6
Consumable insert (GTAW or PAW) _____	None	None
Filler type (solid/metal or flux cored/powder) (GTAW or PAW) _____	Solid	Solid GTAW
Deposit thickness for each process _____		
Process 1: <u>GTAW</u> 3 layers minimum <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.750"	0.1875" – 1.500"
Process 2: _____ 3 layers minimum <input type="checkbox"/> Yes <input type="checkbox"/> No		
Position qualified (2G, 6G, 3F, etc.) _____	1G	1G
Vertical progression (uphill or downhill) _____	N/A	N/A
Type of fuel gas (OFw) _____	N/A	N/A
Inert gas backing (GTAW, PAW, GMAW) _____	Argon 99.9%	Argon 99.9%
Transfer mode (spray/globular or pulse to short circuit-GMAW) _____	N/A	N/A
GTAW current type/polarity (AC, DCEP, DCEN) _____	DCEN	DCEN

**RESULTS**

Visual Examination of Completed Weld (QW-302.4) Acceptable

Bend test;  Transverse root and face [QW-462.3(a)];  Longitudinal root and face [QW-462.3(b)];  Side [QW-462.2];  
 Pipe bend specimen, corrosion-resistant overlay [QW-462.5(c)];  Plate bend specimen, corrosion-resistant overlay [QW-462.5(d)];  
 Macro test for fusion [QW-462.5(b)];  Macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result
Tensile 1	Acceptable	Side Bend 1	Acceptable	Side Bend 3	Acceptable
Tensile 2	Acceptable	Side Bend 2	Acceptable	Side Bend 4	Acceptable

Alternative radiographic examination results (QW-191) N/A

Fillet weld – fracture test (QW-180) N/A Length and percent of defects N/A

Macro examination (QW-184) N/A Fillet size (in.) N/A x N/A Concavity/convexity (in.) N/A

Other tests N/A

Film or specimens evaluated by N/A Company N/A

Mechanical tests conducted by Inspection Specialists, Inc. Laboratory test no. 6438.90

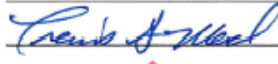
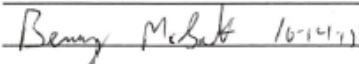
Welding supervised by Travis G. Moore

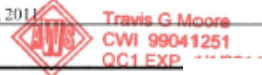
We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code.

Signed Inspection Specialists, Inc. Organization Jacobs Technology

By Travis G. Moore By \_\_\_\_\_

Date October 11, 2011 Date Benny McSalt 10-11-11







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### 8.3 Certificate of Analysis



INSPECTION SPECIALISTS, INC.  
MECHANICAL TESTING LABORATORY DIVISION

## CERTIFICATE OF ANALYSIS


Client: Jacobs Technology Job No: 6438.90  
 Client Representative: Benny McGrath Purchase Order: \_\_\_\_\_  
 Test Specification: ASME Section IX  
 Sample Identification: One (1) – 0.750" Plate Procedure Qualification WPS # SSTD-8070-0015-WELD  
Welders: Scott Harriel & WC King

The above referenced sample was prepared and tested in accordance with the welding procedure qualification requirements of ASME Section IX. Two (2) tensile test specimens and four (4) guided bend test specimens were prepared and tested. The results of these tests are reported herein.

<i>TENSILE TEST</i>						
SPECIMEN ID	WIDTH INCHES	THICKNESS INCHES	AREA SQ. IN.	ULTIMATE LOAD POUNDS	TENSILE STRENGTH PSI	NATURE OF FRACTURE
6438.90 –T1	0.747"	0.725"	0.5416"	43,596	80,495	Base
6438.90 –T2	0.754"	0.724"	0.5459"	43,090	78,934	Base

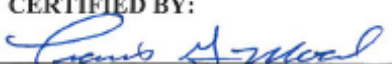
<i>GUIDED BEND TEST</i>		
SPECIMEN ID	TYPE TEST	TEST RESULT
6438.90 –S1	Side Bend	Acceptable
6438.90 –S2	Side Bend	Acceptable
6438.90 –S3	Side Bend	Acceptable
6438.90 –S4	Side Bend	Acceptable

The tests expressed herein meet or exceed the requirements of ASME Section IX.



Travis G Moore  
CWI 99041251  
QC1 EXP. 4/1/2014

Benny McGrath 10-14-11

**CERTIFIED BY:**  
  
 Travis G. Moore, Lab Manager

Date: October 11, 2011 Certificate No: 1 of 1

ALL TEST SPECIMENS, SAMPLES, DROPS, ETC. WILL BE DISCARDED THIRTY (30) DAYS AFTER TESTING UNLESS OTHERWISE INSTRUCTED IN WRITING.

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