
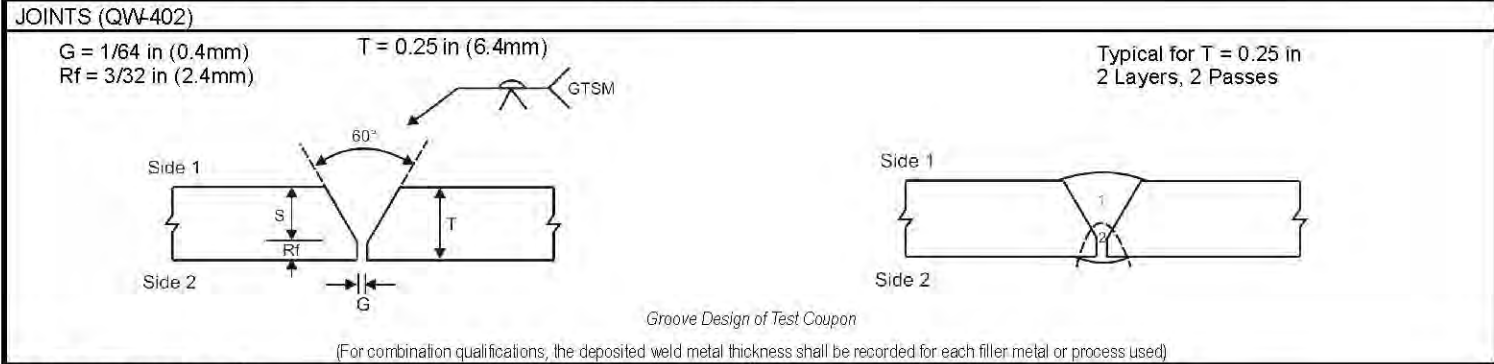


**QW-483 suggested format for procedure qualification records (PQR)**  
**(see QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code)**  
**Record Actual Conditions Used to Weld Test Coupons**

Company Name <b>National Energy Equipment Inc.</b>		By: 
Procedure Qualification Record (PQR) No.:	<b>GMAW-AL-01</b>	Revision: <b>0</b>
Welding Procedure Specification (WPS) No.:	<b>GMAW-AL-01</b>	Issue Date: <b>4-Feb-2019</b>
Welding Process(es):	<b>GMAW</b>	WO: <b>W13939-D2</b>
Type(s) ( Manual, Automatic, Semi-automatic):	<b>Semi-automatic</b>	



<b>BASE METALS (QW-403)</b>		<b>POST WELD HEAT TREATMENT (QW-407)</b>		
Material Spec:	<b>ASTM B209</b>	<b>ASTM B209</b>	PWHT: <b>None</b>	
Type or Grade:	<b>5052</b>	<b>5052</b>	Temperature:	<b>N/A</b> Time: <b>N/A</b>
P no.:	<b>P22</b>	<b>P22</b>	<b>GAS (QW-408)</b>	
Group no.:	<b>N/A</b>	<b>N/A</b>	Shielding Gas (GTAW):	<b>Argon</b> Percent Composition (Mixture): <b>100% Ar</b> Flow Rate (cfph): <b>25</b>
Thickness of test coupon:	<b>0.25 in (6.4 mm)</b>		Backing Gas:	<b>N/A</b> <b>N/A</b> <b>N/A</b>
T Qualified:	<b>N/A</b>		Trailing Gas:	<b>N/A</b> <b>N/A</b> <b>N/A</b>
T- Limits impact:	<b>N/A</b>		<b>ELECTRICAL CHARACTERISTICS (QW-409)</b>	
1 Pass > 1/2 in (13 mm):	<b>None</b>		Heat Input (KJ/in), Max:	<b>All Passes</b>
T- Limits (S. cir. arc.):	<b>N/A</b>		Current:	<b>21.8</b>
<b>FILLER METALS (QW-404)</b>		<b>Technique (QW-410)</b>		
SFA Specification:	<b>All Passes</b>		String or Weave Bead:	<b>Stringer</b>
Filler Metal Classification:	<b>5.10</b>		Orifice, cup, or Nozzle Size:	<b>9/16 in (14 mm)</b>
Filler Metal F- no.:	<b>ER5356</b>		Cleaning Method:	<b>Grinding, brushing</b>
Weld Metal Analysis A No.:	<b>F22</b>		Back Gouge Method:	<b>Grinding</b>
Size of Filler Metal:	<b>ER5356</b>		Oscillation:	<b>None</b>
Filler Metal Product Form:	<b>0.035 in (0.9 mm)</b>		Multipass or Single Pass/side:	<b>Single</b>
Consumable insert:	<b>Solid Wire</b>		Single or Multiple electrodes:	<b>Single</b>
Weld Metal Thickness (t):	<b>None</b>		Contact Tube to Work Distance:	<b>1 in (25 mm)</b>
Supplemental Filler Metal:	<b>0.25 in (6.4 mm)</b>		Electrode spacing:	<b>N/A</b>
Alloy Element:	<b>None</b>		Manual or automatic:	<b>Semi-automatic</b>
1 Limits (S. cir. arc.):	<b>None</b>		Peening:	<b>None</b>
Other/Brand name:	<b>Linde ER5356</b>		Use of thermal processes:	<b>None</b>
<b>POSITION (QW-405)</b>				
Welding Process:	<b>GMAW</b>			
Position of groove:	<b>1G (Flat)</b>			
Weld Progression:	<b>N/A</b>			
<b>PREHEAT (QW-406)</b>				
Preheat Temperature:	<b>65°F (18°C)</b>			
Min. Interpass Temperature:	<b>65°F (18°C)</b>			
Max. Interpass Temperature:	<b>80°F (27°C)</b>			
Other:				

**QW-483 (BACK)**

PQR No. **GMAW-AL-01**

**TENSILE TEST (QW-150)**

Specimen No.	Thickness mm.	Width mm.	Area mm <sup>2</sup> .	Ultimate Force kN	Ultimate Stress Mpa	Type of Failure & Location
5T1	6.15	18.9	116	22.5	194	Base Metal - Ductile
5T2	6.15	18.9	116	22.8	196	Base Metal - Ductile

Comments : **Specified UTS: 170 Mpa min. SKC Report No. W13939-P1901301125T, dated 29/01/2019**

**GUIDE BEND TEST (QW-160)**

Specimen No.	Type of Test	Figure Number	Bending Angle	Results	Comments
5F1	Transverse, Face	QW-462.3(a)	180°	Acceptable	Discontinuities within limit
5F2	Transverse, Face	QW-462.3(a)	180°	Acceptable	Discontinuities within limit
5R1	Transverse, Root	QW-462.3(a)	180°	Acceptable	Discontinuities within limit
5R2	Transverse, Root	QW-462.3(a)	180°	Acceptable	Discontinuities within limit

Comments : **SKC Report No. W13939-P1901301156B, dated 30/01/2019**

**TOUGHNESS TEST (QW-170)**

Specimen No.	Notch Location	Test Temperature °C	Impact Energies	Average Energy	Shear Fracture %	Lateral Expansion mils
			J	J		
N/A						

Comments :

**Hardness Test**

Traverse	Base Metal (HV10)	Heat affected zone (HV10)	Weld Metal (HV10)	Heat affected zone (HV10)	Base Metal (HV10)
N/A					

Comments :

**WELDING EQUIPMENT AND SETTINGS DETAILS**

Process	<b>GMAW</b>				
Power Source	<b>CV</b>				
Wire Feed	<b>N/A</b>				
Program Number	<b>N/A</b>				
Trim Value	<b>N/A</b>				
Welder's Name	<b>Michael Critchlow</b>		Welder's ID	<b>BCSA Reg. # 384846</b>	
Test coupon No.	<b>1G MC 13939</b>		Date test coupon welded	<b>18-Jan-2019</b>	
Mechanical test conducted by	<b>SKC Engineering Ltd.</b>		Laboratory Tests No.	<b>W13939-P1901301125T &amp; W13939-P1901301156B</b>	
Welding Supervised by:	<b>Christopher Ross, Applus RTD</b>				

Notes:

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 ASME IX .

Manufacturer : **National Energy Equipment Inc.**



Zanyar Farhadi, National Quality Systems Manager

Approval

Date: 2019-02-13



2019-02-06

Authorized by: **Mathew Smith, P. Eng.**



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