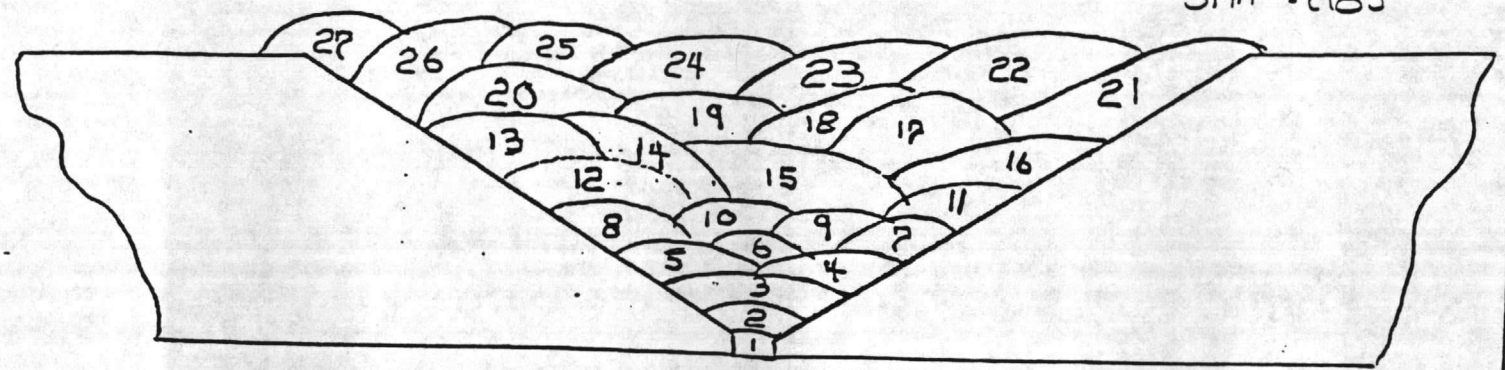
QW-483 SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORD (PQR)
(See QW-201.2, Section IX, ASME Boiler and Pressure Vessel Code)

Company Name Cost Effective Maintenance, Inc.
Procedure Qualification Record No. GTA-1 Date 4-3-84
WPS No. Page 1
Welding Process(es) GTAW, SMAW
Types (Manual, Automatic, Semi-Auto.) Manual

JOINTS (QW-402)

GTA: .1825"
SMA: .2185"



Groove Design Used

BASE METALS (QW-403)
Material Spec. SA-106
Type or Grade Gr.B
P-No. 1 to P-No. 1
Thickness .906
Diameter 8 in. nominal
Other None

POSTWELD HEAT TREATMENT (QW-407)
Temperature 1120°F
Time 2.25 hrs.
Other None

GAS (QW-408)
Type of Gas or Gases 100% Argon
Composition of Gas Mixture N/A
Other None

FILLER METALS (QW-404)
Weld Metal Analysis A-No. 1
Size of Electrode GTA: 3/32 SMA: 3/32 & 1/8
Filler Metal F-No. GTA: 6 SMA: 4
SFA Specification GTA: 5.18 SMA: 5.1
AWS Classification GTA: ER70S-2 SMA: E7018
Other None

ELECTRICAL CHARACTERISTICS (QW-409)
Current DC
Polarity GTA: Straight SMA: Reverse
Amps. GTA: 150-155 Volts GTA: 14-15
Other SMA: 3/32" Amps-100-105 Volts-23-24
1/8" Amps-133-145, Volts-23-26

POSITION (QW-405)
Position of Groove 2G
Weld Progression (Uphill, Downhill) Backhand
Other None

TECHNIQUE (QW-410)
Travel Speed 3-5 IPM
String or Weave Bead String
Oscillation None
Multipass or Single Pass (per side) Multipass
Single or Multiple Electrodes Single
Other None

PREHEAT (QW-406)
Preheat Temp. 240°F
Interpass Temp. 360°F Max.
Other None

This form (E00007) may be obtained from the Order Dept., ASME, 345 E. 47th St., New York, N.Y. 10017

QW-483 (Back)

Tensile Test (QW-150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load lb.	Ultimate Unit Stress psi	Character of Failure & Location
1	.705	.431	.3039	18,800	61,862	Ductile
1B	.705	.323	.2277	~~15,000~~	65,876	Outside Weld
2	.652	.421	.2745	18,600	67,759	Ductile
2B	.652	.325	.2119	14,400	67,957	Outside Weld

Guided Bend Tests (QW-160)

Type and Figure No.	Result
Side Bend #1	No Cracks, No Defects
Side Bend #2	No Cracks, No Defects
Side Bend #3	No Cracks, No Defects
Side Bend #4	No Cracks, No Defects

Toughness Tests (QW-170)

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

Fillet Weld Test (QW-180)

Result — Satisfactory: Yes _____ No _____ Penetration into Parent Metal: Yes _____ No _____

Macro—Results _____

Other Tests

Type of Test _____

Deposit Analysis _____

Other _____

Welder's Name M. H. Cole Clock No. _____ Stamp No. _____

Tests conducted by: Jack Black Laboratory Test No. H-0093-1

We certify that the statements in this record are correct and that the test welds were preprared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Date 4-3-84 Manufacturer Cost Effective Maintenance, Inc.

By T J Blount

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code.)

QW-482 SUGGESTED FORMAT FOR WELDING PROCEDURE SPECIFICATION (WPS)
(See QW-201.1, Section IX, ASME Boiler and Pressure Vessel Code)

Company Name Cost Effective Maintenance, Inc By Ken Epperson
Welding Procedure Specification No. GTA1.1.6.1SMA1.1.4.IG Supporting PQR No.(s) GTA-SMA-1
Revision No. _____ Date _____
Welding Process(es) GTAW, SMAW Type(s) Manual
(Automatic, Manual, Machine, or Semi-Auto.)

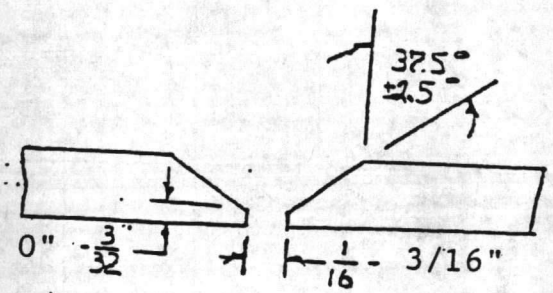
JOINTS (QW-402)

Joint Design Single Vee
Backing (Yes) _____ (No) X
Backing Material (Type) N/A

Sketches, Production Drawings, Weld Symbols or Written Description should show the general arrangement of the parts to be welded. Where applicable, the root spacing and the details of weld groove may be specified.

(At the option of the Mfgr., sketches may be attached to illustrate joint design, weld layers and bead sequence, e.g. for notch toughness procedures, for multiple process procedures, etc.)

Details



*BASE METALS (QW-403)

P-No. 1 Group No. 1 to P-No. 1 Group No. 1
OR
Specification type and grade SA-106 Gr.B
to Specification type and grade SA-106 Gr.B
OR
Chem. Analysis and Mech. Prop. ---
to Chem. Analysis and Mech. Prop. ---
Thickness Range:
Base Metal: Groove .1875 - 1.812 Fillet N/A
Deposited Weld Metal GTA: .1875-.375" SMA: .1875-1.437"
Pipe Dia. Range: Groove Max. to be welded Fillet N/A
Other None

*FILLER METALS (QW-404)

F-No. GTA:6 SMA:4
A-No. 1 Other None
Spec. No. (SFA) GTA: 5.18 SMA: 5.1 Other None
AWS No. (Class) GTA: ER70S-2 SMA: E7018
Size of filler metals GTA: 3/32", SMA: 3/32" & 1/8"
(Electrode Cold Wire, Hot Wire, etc.)
Electrode-Flux (Class) N/A
Flux Trade Name N/A
Consumable Insert None

*Each base metal-filler metal combination should be recorded individually.

Note #1: Initial and Interpass Cleaning

Remove slag by chipping, brush and grind with hand tools and/or rotating power equipment.

(6/30/79)

This form (E00006) may be obtained from the Order Dept., ASME, 345 E. 47 St., N.Y., N.Y. 10017

POSITIONS (QW-405)

Position(s) of Groove: Any Position
Welding Progression: Up X Down
Position(s) of Fillet: N/A

POSTWELD HEAT TREATMENT (QW-407)

Temperature Range: 1100°F
Time Range: 1 hr./inch plus 15 min. for each inch over 2".

PREHEAT (QW-406)

Preheat Temp. Min.: 50°F
Interpass Temp. Max.: N/A
Preheat Maintenance: O_2 & C_2H_2
(Continuous or special heating where applicable should be recorded)

GAS (QW-408)

Shielding Gas(es): 100% Argon
Percent Composition (mixtures): N/A
Flow Rate: 18-20
Gas Backing: None
Trailing Shielding Gas Composition: N/A

ELECTRICAL CHARACTERISTICS (QW-409)

Current AC or DC: DC Polarity: See Below
Amps (Range): See Below Volts (Range): See Below
(Amps and volts range should be recorded for each electrode size, position, and thickness, etc. This information may be listed in a tabular form similar to that shown below.)
Tungsten Electrode Size and Type: 3/32" 1/16" - 1/8" 2% Thoriated (Pure Tungsten, 2% Thoriated, etc.)
Mode of Metal Transfer for GMAW: N/A (Spray arc, short circuiting arc, etc.)
Electrode Wire feed speed range: N/A

TECHNIQUE (QW-410)

String or Weave Bead: String
Orifice or Gas Cup Size: 5/16"
Initial and Interpass Cleaning (Brushing, Grinding, etc.): Initial - Remove Oxidation and Dirt. Interpass - Brush & Grind Before Each Start. (See Note #1)
Method of Back Gouging: None
Oscillation: None
Contact Tube to Work Distance: N/A
Multiple or Single Pass (per side): Multiple No one pass > ½" thick
Multiple or Single Electrodes: Single
Travel Speed (Range): 3-5 IPM
Peening: None Permitted
Other: None

Weld Layer(s)	Process	Filler Metal Class	Filler Metal Dia.	Current Type Polar.	Current Amp Range	Volt Range	Travel Speed Range	Other (e.g., Remarks, Comments, Hot Wire Addition, Technique, Torch Angle, Etc.)
1 to 2	GTAW	ER70S-2	3/32	Straight	130-170	10-20	3-5 IPM	
2 and Above	SMAW	E7018	3/32	Reverse	90-120	20-25	3-5 IPM	
3 and Above	SMAW	E7018	1/8	Reverse	120-150	20-27	3-5 IPM	