QW-482 SUGGESTED FORMAT FOR WELDING PROCEDURE SPECIFICATION (WPS)
(See QW-200.1, Section IX, ASME Boiler & Pressure Vessel Code)

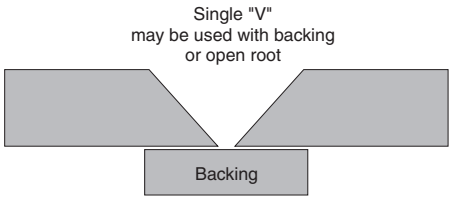
Company Name: Company Inc. **By:** Pea Green
Welding Procedure Spec. No.: CS-3E **Date:** 09-10-13 **Supporting PQR No. (s):** CS-3E, Rev. 0
WPS Revision No.: Rev. 0 **Rev. Date:** 09-10-13
Welding Process(s): SMAW **Type(s):** Manual
(Automatic, Manual, Machine, or Semi-Auto)

JOINTS (QW-402)

Joint Design: _____
Backing: (Yes) X **(No)** X
Backing Material: (Type): SA-516 – Gr. 70
(Refer to both backing & retainers)

X **Metal** ___ **Nonfusing Metal**
___ **Nonmetalic** ___ **Other**
No nonmetalic retainers permitted.

Joint Design



Root spacing for open root: 3⁄32" ± 1⁄32"
Root spacing with backing: 1⁄8" ± 1⁄8"

***BASE METALS (QW-403)**

P-No. 1 **Group No.** 1, 2 and 3 **to P-No.** 1 **Group No.** 1, 2 and 3
OR
Specification type and grade _____
to Specification type and grade _____
OR
Chem. Analysis and Mech. Prop. _____
to Chem. Analysis and Mech. Prop. _____

Thickness range:
Base Metal: **Groove:** 0.188 in. to 1.25 in. **Fillet:** All
Pipe Dia. Range: **Groove:** All **Fillet:** All

*** FILLER METALS (QW-404)**

Spec. No. (SFA):	5.1		
AWS No. (Class):	E7018		
Filler Metal F-No.:	F-No. 4		
Chem. Comp. - A No.:	A-No. 1		
Size of Filler Metals:	3/32 in., 1/8 in., 5/32 in.		

Weld Metal
Thickness range: **Note: single pass thickness 0.500 in. maximum.**

Groove:	1.25 in. maximum		
Fillet:	all sizes		
Electrode-Flux (Class):			
Flux Trade Name:			
Consumable Insert:			
Other:			

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

WPS No.: CS-3E **Rev. No.:** 0

POSITIONS (QW-405)

Position(s) of Groove: ALL
Welding Progression: Up X **Down** X
Positions(s) of Fillet: ALL

POSTWELD HEAT TREATMENT (QW-407)

Temperature Range: 1150°F ± 50°F
Time Range:

PREHEAT (QW-406)

Preheat Temp. Min.: 50°F
Interpass Temp. Max.:
Preheat Maint.: None

(Continuous or special heating where applicable should be recorded.)

GAS ((QW-408)

Percent Composition:

	Gas(es)	(Mixture)	Flow Rate
Shielding:			
Trailing:			
Backing:			

ELECTRICAL CHARACTERISTICS (QW-409)

Current AC or DC: DC **Polarity:** Reverse
Amps Range: 75 to 200 **Volts (Range):** 18 to 30

(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
(Pure Tungsten, 2% Thoriated, etc.)

Mode of metal Transfer for GMAW
(Spray arc, short circuiting arc, etc.)

Electrode Wire feed speed range

TECHNIQUE (QW-410)

String or Weave Bead: String or Weave; with weave not greater than 3 times electrode diameter
Orifice or Gas Cup Size:
Initial and Interpass Cleaning (Brushing, Grinding, etc.): Brush, grind, file as required
Note: weld preparation must be cleaned at least 1 in. back from weld surfaces
Method of Back Gouging: grinding or arc gouging allowed
Oscillation:
Contact Tube to Work Distance:
Multiple or Single Pass (per side): Multiple
Multiple or Single Electrodes: Single
Travel Speed (Range):
Peening: Strictly none allowed
Other:

Weld Layer(s)	Process	Class	Filler Metal		Current		Travel Speed Range	Other (e.g., Remarks, Comments, Hot Wire, Technique, Torch Angle, etc.)
			Dia.	Type Polar.	Amp Range	Volt Range		
ALL	SMAW	E-7018	3/32 in.	DC - RP	75 to 115	18 - 21		
ALL	SMAW	E-7018	1/8 in.	DC - RP	100 to 150	20 - 25		
ALL	SMAW	E-7018	5/32 in.	DC - RP	150 to 200	20 - 28		

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 Coupon

Company Name: Company Inc.
Procedure Qualification Record No.: CS-3E, Rev. 0 **Date:** 09-10-13
WPS No.: CS-3E Rev. 0
Welding Process(s): SMAW
Types (Manual, Automatic, Semi-Auto.): MANUAL

JOINTS (QW-402)

Groove Design of Test Coupon
(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal or process used.)

BASE METALS (QW-403)
Material Spec.: SA-516
Type or Grade: Grade 60
P-No.: 1 **to P-No.:** 1
Thickness of Test Coupon: 9/16 in.
Diameter of Test Coupon: Plate
Other:

FILLER METALS (QW-404)
SFA Specification: 5.1
AWS Classification: E7015
Filler Metal F No.: 4
Weld metal Analysis No.: 1
Size of Filler metal: 1/8 in. and 5/32 in. diameter
Other:
Weld Metal Thickness: 9/16 in.
Note: No single pass > 0.375 in.

POSITION (QW-405)
Position of Groove: 1G
Weld Progression (Uphill, Downhill): N/A
Other:

PREHEAT (QW-406)
Preheat Temp.: 50°F minimum
Interpass temp.:
Other:

POSTWELD HEAT TREATMENT (QW-407)
Temperature: 1150°F ± 50°F
Time:
Other:

GAS (QW-408)

	Percent Composition Gas(es)	(Mixture)	Flow Rate
Shielding:			
Trailing:			
Backing:			

ELECTRICAL CHARACTERISTICS (QW-409)
Current: not recorded
Polarity: not recorded
Amps.: not recorded **Volts:** not recorded
Tungsten Electrode Size:
Other:

TECHNIQUE (QW-410)
Travel Speed: not recorded
String or Weave Bead: string root pass (see Other)
Oscillation:
Multipass or Single Pass (per side):
Single or Multiple Electrodes:
Other: weave limited to 3 times electrode diameter

QW-483 (Back)

PQR No.: CS-3E Rev. 0

Tensile Test (QW-150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load Lb.	Ultimate Unit Stress psi	Type of Failure & Location
1	0.755	0.749	0.565	34,905	61,779	*Base Metal
2	0.752	0.748	0.562	32,908	58,555	Weld Metal

*Specimen fractured in the base metal outside the weld or weld interface.

Guided Bend Tests (QW-160)

Type and Figure No.	Result
Side Bend per QW-462.2	3/16 in. open discontinuity on one corner of specimen, no sign of internal discontinuity
Side Bend per QW-462.2	No discontinuity
Side Bend per QW-462.2	1/16 in. discontinuity in the heat affected zone
Side Bend per QW-462.2	No discontinuity

Toughness Tests (QW-170)

Specimen No.	Notch Location	Specimen Size	Test Temp.	Impact Values			Drop Weight Break (Y/N)
				Ft. Lbs.	% Shear	Mils	

Comments: no impact testing performed

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: Pierrine Nau **Clock No.:** 00ZE **Stamp No.:** PN
Tests conducted by: Pea Green **Laboratory Test No.:** 091013

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: Company Inc.

Date: 09-10-13 **By:** *Bill Smith*