QW-482 suggested format for welding procedure specifications (WPS)
(see QW-200.1, Section IX, ASME Boiler and Pressure Vessel Code)

Company Name:

Seaspan Vancouver Shipyards Co. Ltd.
Seaspan Vancouver Drydock Co. Ltd.
Seaspan Victoria Shipyards Co. Ltd.

Specification: **ASME BPVC Section IX-2019/ASME B31.3-2018/Piping fabrication for design temperature ≥ -2°C**

Welding Procedure Specification No.:	**ASME-Pipe-03-02**	Revision:	**0**
Supporting PQR No.(s):	**DNVGL-Pipe-03-02, DNVGL-Pipe-03-02-1, DNVGL-03-05**	Issue Date:	**9-Jul-20**
Welding Process(es)	**GTAW**		
Type(s):	**Manual**		

JOINTS (QW-402)

Joint design	**Refer Details**	Root Spacing:*	**2mm-4mm**
Backing	**With or Without**	Retainers (+/-)	**No Retainers**

■ Metal ☐ Nonfusing Metal
☐ Non-metallic ■ Other **Purging Gas: 8 - 15 (l/min)**

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.

Details

All typical butt weld joint designs as per ASME B31.3, Ch 5, Clause 328 & Fillet joints

All CJP welded from one side (open root) or from both sides with back gouge to sound metal or welded from one side with backing.

BASE METALS (QW-403)

P no.	**1**	Group no.	**All***	to	P no.	**1**	Group no.	**All***

or
Specification type and grade
to Specification type and grade
or
Chem. Analysis and Mech. Properties
to Chem. Analysis and Mech. Properties

Thickness Range

Base Metal Groove	**1.5 mm to 19 mm**	Fillet:	**All thicknesses**
Pipe Diameter Groove	**All**	Fillet:	**All**
T Limits Impact	**N/A**		

FILLER METALS (QW-404)	**Root,Fill&Cap**
Welding Process	**GTAW**
Filler Metal F No.	**F6**
Filler Weld metal analysis A No.	**A1**
SFA Specification	**5.18**
Filler Metal Classification	**ER70S-2**
Filler Metal Size	**2.4mm - 4.0mm**
Consumable Inserts	**None**
Filler Metal Product Form	**Solid Rod**
Deposit Weld Metal thickness (t)	
Groove	**19mm max.**
Fillet	**All sizes**
Flux (addition/deletion)	**None**
Filler (addition/deletion)	**None**
Other	

QW-482 (BACK)

WPS no. ASME-Pipe-03-02 **Rev. 0**

POSITIONS (QW-405)		POSTWELD HEAT TREATMENT (QW-407)			
Position(s) of Groove	All	PWHT	None		
Welding Progression:	Up	Temperature	N/A	Time	N/A
Position(s) of Fillet	All	T Limits	N/A		

PREHEAT (QW-406)		GAS (QW-408)			
Preheat Temp. Min.	Ambient		Gas(es)	Percent Composition (Mixture)	Flow rate(cfph)
Interpass Temp. Max	144°C				
Preheat Maintenance	As Above	Shielding	Argon	100% Argon	20-30
(continuous or special heating where applicable	N/A	Trailing	None		
should be recorded)		Backing	Argon	100% Argon	8-15

ELECTRICAL CHARACTERISTICS (QW-409)			
Max Heat Input (kJ/	2.22 (As per PQR DNVGL-Pipe-03-02-1)		
mm) Current AC or	DC	Polarity	SP (EN)
DC Amps (range)	See below	Volts (range)	See below
Pulsing I	N/A		
Tungsten Electrode	3.2mm EWTh-2 (2% Thoriated)		
Other			

TECHNIQUE (QW-410)	
Welding Process	GTAW
String or weave bead	Stringer and slight weave(16mm max. bead width)
Orifice or gas cup size	8 mm
Method cleaning	Brushing, grinding
Method of back gouging	Grinding, Arc Gouging
Oscillation	Slightly, as required
Multiple or single pass (per side)	Multipass, as required
Single or multi electrode	Single
Closed to out chamber	N/A
Electrode spacing	N/A
Manual or automatic	Manual
Peening	None
Use of thermal processes	None
Other	

Layers /Passes	Process	Filler Metal Classification	Filler Metal Diameter (mm)	Type Polarity	Amps	Volts	ATS (ipm)	Other
Root / Hot	GTAW	ER70S-2	2.4, 3.2	DCSP(EN)	70-140	11-18	2 - 7	
Fill & Cap	GTAW	ER70S-2	2.4, 3.2 & 4.0	DCSP(EN)	90-230	11-18	6 - 11	

Welding Notes:

Base metal shall be in clean condition. Dirt of any kind must be removed along with residual oil and grease.
Avoid sources of the elements that can cause cracking or microfissuring in the weld (like crayon, paint identification, temperature indication markers, and other contaminants).

Manufacturer : **Seaspan Vancouver Shipyards**

2020-08-07

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Date: **Jul-09-2020**

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