

Welding & NDT

QW-482 WELDING PROCEDURE SPECIFICATION (WPS)
 (See QW-200.1, Section, IX, ASME Boiler and Pressure Vessel code)

PW.P.S. NO. : S-001		Supporting PQR(s) 001		POSTWELD HEAT TREATMENT (QW-407)				ELECTRICAL CHARACTERISTICS (QW-409)								
Revision No.:	0	Welding Process(es):	SMAW	.1 \emptyset Type of PWHT:	NONE	.4 (a) \emptyset Current (AC or DC):		SEE BELOW								
Date:	30/04/2019	Type(s):	MANUAL	.2 (a) Temperature Range :($^{\circ}$ C)	NA	.4 (b) \emptyset Polarity (EN or EP):		SEE BELOW								
Equipment Name:			Joint Type: GROOVE/FILLET	.2 (b) Time Range:(Minute)	NA	.8 (a) \emptyset Amperes (Range):		SEE BELOW								
JOINTS (QW-402)				Method of PWHT:	NA	.8 (b) \emptyset Voltage (Range):		SEE BELOW								
.1 \emptyset Joint Design:	AS PER DRAWING	Typical:		.4 T Limits	NONE	.1 > Heat Input :		NA								
.4 - Backing: (Yes/No)	Yes			Rate Of Heating:($^{\circ}$ C/hr)	NA	Others :		NA								
Backing Material (type):	WELD/BASE METAL			Rate Of Cooling:($^{\circ}$ C/hr)	NA											
.10 \emptyset Root Spacing	AS PER DRAWING			Others :	NA											
.11 \pm Retainers :	NA			GAS (QW-408)												
Root face & Included Angle:	1-2 mm & 60 $^{\circ}$			Gas(es)		Mixture & Composition		Flow rate (LPM)								
BASE METALS (QW-403)				Shielding Gas:	NA	NA		NA								
MATERIAL - 1		MATERIAL - 2		Backing Gas or Backing Flow:	NA	NA		NA								
.11 \emptyset P.NO.:	1	P.NO.:	1	Trailing Gas or Comp:	NA	NA		NA								
.5 \emptyset Group No.:	2	Group No.:	1	Backing Gas or Comp:	NA	NA		NA								
Specification/Grade:	SA516GR70	Specification/Grade:	SA516GR60	Shielding or Trailing:	NA	NA		NA								
.8 \emptyset Thickness Range : (mm)				TECHNIQUE (QW-410)												
Base Metal	Groove : 5-32	Fillet : ALL	Tube sheet: NA	.1 \emptyset String/Weave Bead:	STRING/WEAVE (WEAVING SHALL NOT EXCEED 3 TIMES THE ELECTRODE CORE DIA)											
Pipe Dia Range	Groove : ALL	Fillet : ALL	Ligament: Width : NA	.9 \emptyset Multi/Single pass (per side):	MULTI PASS											
Overlay thickness (Min):	NA	Tube thickness: NA		.10 \emptyset Multiple/Single Electrode:	SINGLE											
.6 T Limits :	NA	.9 t Pass> 12.7 mm	EACH PASS THK < 6 mm	.26 \pm Peening:	NA											
FILLER METALS (QW-404)				.5 \emptyset Initial or Interpass	WIRE BRUSH OR GRIND/MACHINED ;SURFACE TO BE GROUND OR POWER WIRE BRUSHED OR MACHINED											
ROOT PASS		FILL UP PASS(es)		COVERING PASS(es)												
.4 \emptyset F.NO.:	4	4	4	.6 \emptyset Method of Back Gouging:	BY AIR ARC GOUGING, MACHINING ,GRINDING etc											
.5 \emptyset A.NO.:	1	1	1	.25 \emptyset Manual or Automatic	MANUAL											
Spec No.(SFA):	5.1	5.1	5.1	.64 \emptyset Use of Thermal Process :	NONE											
.12 & .33 \emptyset AWS No.(Class):	%E7018	%E7018	%E7018	Others :	NA											
.6 \emptyset Size of Filler Metal (mm):	3.2,4.0,5.0	3.2,4.0,5.0	3.2,4.0,5.0	Weld Layer(s)		Process		Filler Metal		Current		Volt (Range)	Travel Speed (mm/min)	Energy or Power (Range)	Maximum Heat Input (KJ/mm)	Minimum Bead Length (mm)
.7 \emptyset Diameter > 6 mm	NA	NA	NA													
.30 \emptyset Weld Metal Thk Range:	UPTO 20 mm (MAX)															
Chemical Composition:	NA			AS REQ	SMAW	E7018	3.2	DCEP	100-140	22-28	AS PER PQR	NA	1.5	150		
Brand Name :	% E7018 OF APPROVED BRAND SHALL BE USED			AS REQ	SMAW	E7018	4.0	DCEP	150-180	22-28	AS PER PQR	NA	1.5	180		
Other :	NA			AS REQ	SMAW	E7018	^ 5.0	DCEP	200-240	22-28	AS PER PQR	NA	1.5	200		
POSITIONS (QW-405)																
.1 + (a) Position(s) of Groove :	ALL			NA : NOT APPLICABLE												
.2 & .3 \emptyset Welding Progression :	VERTICAL UPHILL			NONE : ESSENTIAL VARIABLE BUT NOT USED												
.1 + (b) Position(s) of Fillet :	ALL			Legend :												
Other:	NA			+ Addition > Increase/greater than \uparrow Uphill \leftarrow Forehand \emptyset Change -Deletion < Decrease/less than \downarrow Downhill \rightarrow Backhand												
PREHEAT (QW-406)																
Thickness Range (mm)	\leq 25	> 25-38														
.1 Preheat Temp (MIN) $^{\circ}$ C :	25	100														
.3 Interpass Temp (MAX) $^{\circ}$ C:	275	275														
Preheat Maintenance :	NA															
Method of measuring .1 & .3	Temperature indicating crayon / Laser gun															
PREPARED BY: WELDING ENGINEER				REVIEWED BY: WELDING MANAGER				APPROVED BY: CLIENT/CUSTOMER/TPI				ASME DESIGNATOR <input checked="" type="checkbox"/> REQ. <input type="checkbox"/> NOT REQ.				
NAME:				NAME:				NAME:								
DATE:				DATE:				DATE:								