

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <h2 style="margin: 0;">WELDING AND NDT</h2> <h3 style="margin: 0;">QW-482 WELDING PROCEDURE SPECIFICATION (WPS)</h3> <p style="margin: 0;">(See QW-200.1, Section, IX, ASME Boiler and Pressure Vessel code)</p> </div> </div>																	
PW.P.S. NO. : GS-001			Supporting PQR(s) 001			POSTWELD HEAT TREATMENT (QW-407)			ELECTRICAL CHARACTERISTICS (QW-409)								
Revision No.:	0	Welding Process(es):	GTAW + SMAW		.1 ϕ Type of PWHT:	NONE		.4 (a) ϕ Current (AC or DC):	SEE BELOW								
Date:	14.08.2019	Type(s):	MANUAL + MANUAL		.2 (a) Temperature Range (°C)	NA		.4 (b) ϕ Polarity (EN or EP):	SEE BELOW								
Equipment Name:	Static Pressure Vessel	Joint Type:	GROOVE/FILLET		.2 (b) Time Range:(Minute)	NA		.8 (a) ϕ Amperes (Range):	SEE BELOW								
JOINTS (QW-402)						Method of PWHT:			.8 (b) ϕ Voltage (Range):								
.1 ϕ Joint Design:	Refer Typical		Typical:		.4 T Limits	NONE		.12 ϕ Tungsten Type.*	2% Thoriated	Size (mm): 2.4 mm OR EQUI							
.5(a) + Backing: (Yes/No)	No				Rate Of Heating:(°C/hr)	NA		.1 > Heat Input :	NA								
.5(b) Backing Material (type):	NA				Rate Of Cooling:(°C/hr)	NA		.3 \pm Pulsing Current :	NA								
.10 ϕ Root Spacing	2-4 mm				Others :	NA		Others :	NA								
.11 \pm Retainers :	NA				GAS (QW-408)												
Root face & Included Angle:	1-1.5 mm & 60°		.2 (a) ϕ Gas(es)	.2(b) ϕ Mixture & .2 ϕ % Composition		.3 ϕ Flow rate (LPM)											
BASE METALS (QW-403)						.2d \pm Shielding Gas:	ARGON		SINGLE (NO CHANGE IN COMPOSITION)								
MATERIAL - 1			MATERIAL - 2			.5 \pm Backing Gas or ϕ Backing Flow:	NA		NA								
.11 ϕ P.NO.:	1		P.NO.:	1		.1 \pm Trailing Gas or ϕ Comp:	NA		NA								
.5 ϕ Group No.:	1.2		Group No.:	1.2		.9 - Backing Gas or ϕ Comp :	NONE		NA								
Specification/Grade:	SA 516 Gr 70/SA105/SA234WPB		Specification/Grade:	SA 516 Gr 60/SA106GB		.10 ϕ Shielding Trailing gas:	NONE		NONE								
.8 Thickness Range : (mm)	TECHNIQUE (QW-410)																
a) Base Metal	Groove :	5-32	Fillet :	NA	Tubesheet:	NA	.1 ϕ String/Weave Bead:	STRING/WEAVE @		.3 ϕ Gas Cup Size: (mm)	6.3 mm Dia or EQUI						
b) Pipe Dia Range	Groove :	ALL	Fillet :	ALL	Ligament:	Width : NA	.15 ϕ Electrode Spacing :	NA		.11 ϕ Closed to out Chamber :	NONE						
Overlay thickness (Min):	NA		Tube thickness: NA	.10 ϕ Multiple/Single Electrode:	SINGLE		.9 ϕ Multi/Single pass (per side):	MULTI PASS									
.9 t Pass<12.7 mm	NONE		.6 T Limits :	NA		.7 ϕ Oscillation:	NA		.26 \pm Peening:	NA							
FILLER METALS (QW-404)						.5 ϕ 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)		Cleaning:	BY GRINDING IF REQUIRED									
.4 ϕ F.NO.:	6		6 + 4	4		.6 ϕ Method of Back Gouging:	Manual										
.5 ϕ A.NO.:	1		1 + 1	1		.25 ϕ Manual or Automatic	Manual										
Spec No. (SFA):	5.18		5.18 + 5.1	5.1		.64 ϕ Use of Thermal Process :	NONE										
.12 & .33 ϕ AWS No. (Class):	ER70S-2		ER70S-2 + E7018	E7018		Others :	NA										
.3 ϕ Size of Filler Metal (mm):	2.4/2.5		2.4/2.5 + 3.2.4.0	4		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)		
.23 ϕ Filler Metal Product Form:	SOLID (BARE) WIRE	SOLID (BARE) WIRE + NA	NA		Classification			Dia. (mm)	Type & Polarity							Amp. (Range)	
.50 \pm Flux :	NA		NA + NA	NA		AS REQ	GTAW	ER70S-2	2.4/2.5	DCEN	80-150	10-18	AS PER PQR	NA	1.5	NA	
.14 \pm Filler :	WITH ADDITION ONLY		WITH ADDITION ONLY + NA	NA		REMAINING	SMAW	E7018	3.2	DCEP	100-140	22-28	AS PER PQR	NA	1.5	150	
Flux Trade Name:	NA		NA + NA	NA		REMAINING	SMAW	E7018	4.0	DCEP	150-180	22-28	AS PER PQR	NA	1.5	180	
.22 \pm Consumable Insert:	NA		NA + NA	NA													
.30 ϕ Weld Metal Thk Range:	GTAW UPTO 12 mm(MAX)		SMAW UPTO 20 mm (MAX)														
Chemical Composition:	NA																
Brand Name/ Batch No:	GTAW WIRE OF APPROVED BRAND & E7018 OF APPROVED BRAND TO BE USED																
Other :	NA																
POSITIONS (QW-405)																	
.1 + (a) Position(s) of Groove :	ALL																
.2 & .3 ϕ Welding Progression :	VERTICAL UPHILL																
.1 + (b) Position(s) of Fillet :	ALL																
Other:	NA																
PREHEAT (QW-406)																	
Thickness Range (mm)	≤25	>25-38															
.1 Preheat Temp (MIN)° C :	25	100															
.3 Interpass Temp (MAX)° C:	275	275															
Preheat Maintenance :	NA																
Method of measuring .1 & .3	Temperature indicating crayon / Laser gun/Contact Resistance Thermometer																
*Tungsten electrode can be identified as : 1)EWTh-2 or WT 20(Red Colour)																	
NA : NOT APPLICABLE						NONE : ESSENTIAL VARIABLE BUT NOT USED											
Legend :																	
+ Addition			> Increase/greater than			↑ Uphill		← Forehand		∅ Change							
- Deletion			< Decrease/less than			↓ Downhill		→ Backhand									
PREPARED BY: WELDING ENGINEER				REVIEWED BY: WELDING MANAGER				APPROVED BY: CLIENT/CUSTOMER/TPI									
NAME: ABC				NAME: SANDEEP SINGH				NAME: XYZ									
DATE: 14.08.2019				DATE: 14.08.2019				DATE: 31.08.2019									
ASME DESIGNATOR																	
<input checked="" type="checkbox"/> REQ.																	
<input type="checkbox"/> NOT REQ.																	