R-10-153	**BHEL: BAP : RANIPET** **WELDING TECHNOLOGY CENTRE**	**PAGE 1 OF 2**

QW – 482 ASME SECTION IX.
WELDING PROCEDURE SPECIFICATION (WPS)

WPS NO: 228 **DATE:** 12.09.19 **Supporting PQR NO:** 189

REV NO: **DATE:**

Welding process (es): Shielded Metal Arc Welding

TYPE: (Manual / Semi Auto / Auto): Manual

Application(s): Components of C276 Material (Haste alloy)

QW – 402 JOINTS	**JOINT DETAILS**
Joint design : Groove ,Fillet & Plug Backing : No Backing Material Type : --	Refer Production Drawing

BASE METALS (QW-403)
P.NO. 43 Group No -- to P.NO. 43 Group No -- (OR)

Specification type and grade: ASTM B575 (UNS N10276)

Specification type and grade: ASTM B575 (UNS N10276)

Thickness Range: Base Metal: Groove: 1.5 mm to 12 mm Fillet: Unlimited
Pipe Dia Range: Fillet :

FILLER METALS (QW-404)	SMAW	
Spec.No (SFA)	*5.11*	
AWS No (Class)	*E NiCrMo-4*	
F. Number	*43*	
A . Number	-	
Size of Filler Metals	*See Table*	
Weld Metal Thickness Range: Groove: Fillet:	 *12 mm Max.* *All*	
Electrode – Flux (Class)	--	--
Flux Trade Name	--	--

POSITIONS (QW – 405)	**PRE HEAT (QW– 406)**
Position(s) of Groove : 3G ,2G, 1G Welding Progression : Vertical up Position(s) of Fillet : 3F,2F,1F	Preheat Temp Min °C: Nil & Moisture on surface to be removed Interpass Temp Max °C : 150 Preheat Maintenance: --- Special heating applicable: ---

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		REV NO :		

POSTWELD HEAT TREATMENT (QW- 407)

Temperature Range °C : NA
Time Range : NA

GAS (QW – 408) Percent Composition

	Gas(es)	Mixture	Flow Rate
Shielding:	*NA*		
Trailing :	--		
Backing :	--		

ELECTRICAL CHARACTERISTICS (QW – 409)

Current AC or DC : See Table
Amps (Range) : See Table
Polarity : See Table
Volts (Range) : See Table
Tungsten Electrode Size and Type : --
Mode of Metal Transfer for GMAW: --
Electrode Wire feed speed Range : --

TECHNIQUE (QW-410)

String or Weave Bead : Stringer & Weave Bead
Orifice or Gas Cup Size : --
Initial and Interpass Cleaning : (Wire Brush, Chipping, Grinding ,etc.)
Method of Back Gouging : Grinding
Oscillation : : --
Contact Tube to work Distance : --
Multiple or Single Pass (Per side) : Multiple Pass
Multiple or Single Electrode : Single
Travel Speed (Range) : --
Peening : --
Others : --

Weld Layers	Process	Filler Metal Class	Filler Metal Dia in mm	Current Type Polarity	Current Amp. Range	Volt Range	Travel Speed Range mm/Min.	Others (e.g. Remarks, Comments, Hot Wire Addition, Technique Torch Angle, Etc.)
Root	SMAW	E NiCrMo-4	2.50	DC-EP	60-80	22-28	--	--
Filler	SMAW	E NiCrMo-4	3.15	DC-EP	70-90	22-28	--	--
Cap	SMAW	E NiCrMo-4	4.00	DC-EP	90-120	22-28	--	--

** Prior to welding, adjacent area within 40mm from edge preparation shall be free of dirt, grease or any other harmful materials to weld

FOR BHEL : BAP : RANIPET

Prepared By	Reviewed and Approved By
Signature & Seal: N.BALAMURUGAN Dy. Manager / Production / WTC / H1 BHEL / BAP / RANIPET - 632 406	Signature & Seal: M.VALAVAN Dy.General Manager / Production BHEL / BAP / RANIPET - 632 406
Date: 12/09/19	Date: 12.09.19.