



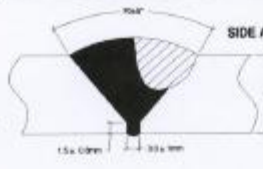
**WELDING PROCEDURE SPECIFICATION(WPS)
QP-SPC-R-010-2, ES-L-30.2 & BS 4515-1**

**WPS No.
AAIS-WPS-PL-4**

Company Name:

CONTRACT No.

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Supporting PQR No(s):	AMC-PQR-053 REV.-0 & AMC-PQR-054 REV.-0	Welding process(es):	SMAW
		Type:	MANUAL
JOINTS Joint design: 		BASE MATERIAL Spec. & type: API 5L X60 / X65 (PIPE) TO API 5L X60 / X65 (PIPE) P.No.1 Gr.No.2 TO P.No.1 Gr.No.2 Source of Steel: V & M GERMANY Supply Condition: HOT FINISH SEAMLESS LINE PIPE	
Root spacing:	3 ± 1mm	Base metal:	Thickness(mm):
Backing:	Yes for SMAW	Groove:	12.5 mm to 25.0 mm
Groove:	Single V	Filet Joint:	ALL
Filet:	N/A		
DEPOSITED METAL Groove (MAX): SMAW max. 16.00 mm Filet (MAX): ALL Overlay thickness qualified mm (min): N/A		Diameter (mm): 114.3 mm < OD ≤ 323.9 mm	
BACKING MATERIAL: Metallic: NA Non Metallic: NA Non fusing: NA Others: NA Retainers: NA			
Preparation Method: Repair Area excavated by grinding welds partially (partial Thickness). MPI carried out on excavated area. Repair area shall be preheated min. 90°C before welding.			

FILLER METALS		Root	Filing	POSITION QUALIFIED
Process:		GTAW	SMAW	Groove position: ALL
Filler type:		N/A	COVERED ELECTRODE	Weld progress: UPHILL
Supplier:		N/A	ESAB OK 46 08	Filet position: ALL
Size mm Ø:		N/A	2.5, 3.2 & 4.0mm	PREHEAT
SFA No.:		N/A	A5.5	Preheat Temp. °C (Min): 90 °C
AWS No.:		N/A	E7018-G	Maintenance: PROPANE / LPG TORCH
F No.:		N/A	4	Method: MANUAL
A No.:		N/A	1	Interpass Temp °C (Max): 180 °C
Flux trade name:	N/A	Supplier:	N/A	Temp: Measurement by Digital Thermometer and temp. indicating crayons
Electrode flux comp.:	N/A	Supplementary filler:	N/A	
Particle size:	N/A	Powder filler:	N/A	
Others:	N/A	Addition of cold filler:	N/A	
				Neutral, Active or Alloy flux: N/A

HEAT TREATMENTS				TECHNIQUE			
Type:	NA			String & weave bead:	Weaving(Fill & cap)		
Temp. °C:	NA			Orifice of gas cup size:	N/A		
H.R. °C/H:	NA			Initial interpass cleaning:	Power Brush / Grinding / Chipping		
C.R. °C/H:	NA			Method of backgouging:	N/A		
Soaking Time:	NA			Oscillation:	N/A		
				Contact tube to work distance:	N/A		
				Number of Welders:	One		
				Multipass or Single:	Multipass		
				Single or Multiple electrode:	Single		
				Electrode spacing:	N/A		
				Welding method:	Manual		
				Closed to out chamber:	N/A		
				Magnetic control device:	NA		
				Overlap:	1.5 mm to 3 mm max.		
				Peening:	N/A		
				Others:	Time lapse between subsequent passes maximum 3-4 minutes		

GAS			
Gases	% Composition	Flow rate	
Shielding:	N/A	N/A	N/A
Backing:	N/A	N/A	N/A
Trailing:	N/A	N/A	N/A

ELECTRICAL CHARACTERISTICS				WELDING SEQUENCE			
Current:	DC	POLARITY: See below table					
Pulsing:	N/A						
Amps range:	See below table	Volts range: See below table					
Metal transfer mode for GMAW:	N/A						
Flux mode wire speed range (cm/min):	N/A						

Weld layers	Welding Progression	Process	Filler metal		Current		Volt Range	Travel Speed mm/min	Heat Input KJ/mm (Max.)	Remarks
			AWS Class	Dia. mm	Type & Polarity	Amps Range				
Filling	Up Hill	SMAW	E7018-G	2.5	DCEP	83 - 145	21-28	85-170	1.0-2.9	
Filling	Up Hill	SMAW	E7018-G	3.2	DCEP	108 - 151	21-28	85-170	1.0-2.9	
Caping	Up Hill	SMAW	E7018-G	2.5	DCEP	81 - 134	21-28	100-210	0.9-1.5	

Prepared By.	Reviewed /Witnessed By.	Approved By.
AAIS	VELOSI	AAIS
Date.		