







Plant MRPL Mangalore		Client MRPL	Contract Code WSS for PFCC Flue Gas		Document ID 6723-JEX-G00-EC-0001-A201		Contract No. 66-6723					
<div></div>		<div>Indicative Inspection and Test Plan(IITP) for Seamless, ERW & EFW Pipes Ordered on Manufacturers</div>						<div> ONGC एन.जी.सी. MRPL</div>				
Rev		00	Page	1	of	4						
<p>The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure</p>												
Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By				
							Vendor	LSTK Contractor	TPIA	PMC / Owner		
A	QAP								Endorse	Prepare	A	A
B	Receiving Inspection											
1	Inspection of Coils / Billets / Plates	Steel making process, Mechanical & Chemical Properties	Review of Mechanical & Chemical Properties	One sample per Heat / Coil	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	MTC	P	R	R	-	
C	In-Process Inspection / Testing											
1	Welding (For EFW Pipes)	Welding Procedure / Technique / Quality	Review of WPS / PQR / Welder Qualification	100%	ASME Section IX, specification	As per ASME IX, specifications	WPS / PQR/WPQ	P	R	R	-	
1A	Ferrite test	Ferrite no test for all austenitic stainless steels	Ferritescope check	100%	Applicable Material & Order Specifications	A Ferrite No. (FN) not less than 3% and not more than 10%	Ferrite no report	P	H	H	-	
2	Heat Treatment	As per Code / Order Specification	Heat Treatment Cycle	100%	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Heat Treatment Chart, report	P	R	R	-	
3	NDT	Soundness of Pipe	Flux leakage. UT / Eddy Current Test. As applicable.	Applicable Material & Order Specifications	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	NDE Report	P	R	R	-	



Plant MRPL Mangalore	Client MRPL	Contract Code WSS for PFCC Flue Gas	Document ID 6723-IEG-G00-EC-0001-A201	Contract No. 66-6723			
 thyssenkrupp		Indicative Inspection and Test Plan(IITP) for Seamless, ERW & EFW Pipes Ordered on Manufacturers					
							
		Rev	00	Page	2	of	4

The tests indicated are general minimum requirements of IklS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, IklS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure

Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By			
								Vendor	LSTK Contractor	TPIA	PMC / Owner

4	NDT for EFW	Soundness of Weld	Radiography of Weld, if applicable	Applicable Material & Order Specifications	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Radiography Test Report	P	R- Review of RT Films	-			
5	Hydrostatic Test	Leak Tightness	Visual & Records Review	100%	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Inspection report	P	H- 10%	-			
D	Product testing												
1	Test piece identification by LSTK Contractor & TPIA per heat / heat treatment / size	1. Chemical Analysis (2) Max Carbon Equivalent -0.42 for Carbon steel	Review of Chemical properties	Per Heat	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Lab test certificate	P	R	R			
		2. YS, UTS, EL, R.A, Flatness, Bend Test, IGC B/E Test as applicable	ASTM A370 & A 262	Applicable Material & Order Specifications				P	H	H			
		3. Hardness as applicable	ASTM A370										
		4. Impact Test (if Applicable)	ASTM A370										

Plant	Client	Contract Code	Document. ID	Contract No.							
MRPL Mangalore	MRPL	WSS for PFCC Flue Gas	6723-IEJ-G00-EC-0001-A201	66-6723							
<div><div></div><div><div><div>Indicative Inspection and Test Plan(IITP) for Seamless, ERW & EFW Pipes Ordered on Manufacturers</div><div></div></div></div></div>											
<div>The tests indicated are general minimum requirements of tkIS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tkIS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure</div>											
Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By			
								Vendor	LSTK Contractor	TPIA	PMC / Owner
E	Final inspection	1. Surface Condition, pickling & passivation for SS pipes	Visual	100%	Applicable Material & Order Specifications	Conformance to Codes & Order Specification	Inspection report	P	100%-H	100%-H	-
		2. Dimension & End Finish BW / PE / Thread	Measurement & check	100% by Vendor				H	10%-H	10%-H	-
		3. Marking, as per Material & order Specification, and Tag No.	Visual	100%				H	100%-H	100%-H	-
		4. Galvanising for galvanized items and hardness check	As per applicable Specification	100% for Coating Thickness &. Other tests				P	10%H Coating thick	10%H Coating thick	-
F	PMI as specified in Technical requirements	Alloying Elements for materials and welds	As per Specification	100%	As per Applicable Material & Order Specifications	Conformance to Codes & Order Specification	PMI Report	P	10% -H	10% -H	-
G	Final Stamping by LSTK Contractor & TPIA	Surface & end protection, packing & Colour Coding	Visual	100%	As per Applicable Material & Order Specifications	Conformance to Codes & Order Specification	MTC	P	100% H	100% H	-

Plant MRPL Mangalore		Client MRPL		Contract Code WSS for PFCC Flue Gas		Document ID 6723-LEX-G00-EC-0001-A201		Contract No. 66-6723							
<div></div>		Indicative Inspection and Test Plan(IITP) for Seamless, ERW & EFW Pipes Ordered on Manufacturers						<div></div>		Rev	00	Page	4	of	4
The tests indicated are general minimum requirements of tklS India. All Tests, as applicable, have to be performed as specified in the Order, Order Attachments, Codes, tklS India Specifications, Licensor's Specifications and Standards. In case of discrepancies between the Indicative Inspection Test Plan and the workshop documents Approved / Reviewed by LSTK Contractor, the latter shall apply. The Manufacturer shall be responsible for the required Tests to be performed and for the Inspector to be invited in due time to witness the Tests. The Manufacturer shall try to perform as many individual Tests as possible on same day, provided that the fabrication process permits such a procedure															
Sr. No.	Inspection / Test Stage	Checks	Type of Inspection	Frequency of Check	Reference Document	Acceptance Norm	Format of Record	Inspection By							
								Vendor	LSTK Contractor	TPIA	PMC / Owner				
H	Inspection documentation & Issue of Inspection of Release Note	Material Test Certificate	Review of Documents	100%	As per Applicable Material & Order Specifications	Conformance to Codes & Order Specification	IRN, MTC With back up reports	P	H	H	R				
I	Final documentation & Issue of Despatch Clearance	Manufacturer Test certificates & Issue of Despatch Clearance	Review of Documents	100%	As per Order & Order Specification	Conformance to Order & Order Specification	--	P	H	-	H				
Notes - <div><div>1. LSTK contractor to prepare a final QAP based on this IITP, Applicable specifications, standards and codes and submit to PMC for final approval.</div><div>2. In addition to the requirements of IITP, all requirements of Purchase order, material specification, Order specification and Order Technical requirements (MRPL Document ID: EDB-0006) for raw material and final product shall be fulfilled. In addition, Material in Hydrogen Service shall comply with the requirements of Annexure F of document EDB-0006. Material in Sour service shall comply with the requirements of NACE MR0103 & MR0175 & EDB-0006.</div><div>3. Where ever % of inspection is mentioned it is per Tag, Per Size, per visit. For PMI - Per Tag, per heat, per size, per visit.</div><div>4. Any other tests if specified in order, order specifications, order attachments, like IGC etc., shall be tested and test witnessed by LSTK Contractor & TPIA.</div><div>5. Statutory requirement and inspection by Statutory Authority, if applicable, the same shall be met.</div><div>6. LSTK Contractor, TPIA may increase percentage of inspection up to 100% if any rejection or non-conformity is observed during sampling inspection, or based on past experience with vendor.</div><div>7. Hydro test Water quality shall be as potable for CS and LAS. For SS material Chloride shall be 20 ppm max</div><div>8. Statutory requirement and inspection by Statutory Authority, if applicable, the same shall be met. IBR requirements for EDB-0006 shall be met. Original IBR Forms shall be submitted.</div></div>															
Legends: W - Witness, R - Review, H - Hold, P-Perform, A- Approval															
Devesh Sharma		Abhi Thomas / T. V. Sundar		Syam S Nelliparambil											
Prepared by: LE		Checked by: SSP / DQAR		Approved by: HDP											