



Item: Installation of Rigid Pipelines & Risers					INSPECTION CATEGORY: A
ONGC FUNCTIONAL SPEC: 2015					
Activity No	1. Inspection by ONGC or ONGC Appointed Certification Agency (CA)				
	2. Inspection by ONGC's inspection agency (TPI)				
	3. Inspection by Contractor/ Sub-Contractor				
	Stages of Inspection				
					<b>Material Receiving, Storage and Handling on Offshore Barge</b>
1	R	R	P		All permanent Project Materials conforms to Specifications and Approved by Client/ TPI
2	RW	W	P		All material damages found shall be Identified, marked , recorded, segregated, stacked separately and informed to Client
3	RW	W	P		Ensure that all line pipes are having bevel protectors/ end caps. Records shall include photographs showing bevel protectors/ end caps at various stages during storage and transport
4	R	R	P		Ensure Non- conforming report is made for materials not conforming to requirements
5	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Pipeline Initiation &amp; Start-up, Riser Installation (as applicable)</b>
6	M	R	P		Ensure documentation, drawings and procedures including lay analysis, procedure for buckle detector plate insertion, procedure for repair and recovery for dry and wet buckled pipeline etc. are latest Revision approved by ONGC
7	M	R	P		Ensure Pull heads are tested and have full records
8	M	M	P		Ensure availability of line pipes with require wall thickness, grade and concrete coating thickness
9	M	M	P		Ensure availability of required type of Anode installed pipe
10	W	W	P		Buckle detector gauge plate dimensional inspection
11	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Welding</b>
12	M	M	P		Visual inspection of Pipes for damage in bevel, Anti-corrosion coating and Concrete coating
13	R	M	P		Pipe tally report verification with Pipe Number, Heat Number and Length
14	R	M	P		Check ovality of Pipe at ends
15	R	M	P		Pipe end caps shall only be removed immediately prior to bevelling activity. If delays occur between bevelling and line-up and welding then contractor shall replace the end caps.



16	R	M	P		A rabbit brush is run through the pipe joint to check and clean the internal surface of the pipeline. Before being added to the line each pipe joint is cleaned by compressed air blowing and visually inspected to ensure that no loose debris has entered the line pipe before lifting for fit-up.
17	R	R	P		Ensure fit up of internal/external line clamps and availability and display at weld station of Approved Welding Procedure Specification (WPS)
18	R	R	P		Ensure availability of Qualified Welders and their welder test certificates/reports at weld station
19	R	R	P		Ensure availability of Welding consumables and their conformity certificates
20	R	M	P		Ensure availability of Baking and Holding ovens for Low Hydrogen Electrodes
21	R	R	P		Calibration for temperature of mother oven and Portable oven
22	M	M	P		Maintain Electrode Baking log book
23	M	M	P		Ensure availability of appropriate welding machines
24	R	R	P		Ensure availability of ID cards for welders
25	RW	RW	P		Fit-up Inspection as per the joint design in WPS
26	RW	RW	P		Monitor welding variables as per approved WPS at each welding station at start of each shift
27	RW	RW	P		Weld inspection for completed welds
28	R	M	P		Ensure proper Weld number and Welder ID number written on the pipe adjacent to the weld
29	R	RW	P		Preparation of Weld Visual Inspection Report
30	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Non-Destructive Testing</b>
31	R	R	P		Availability of Approved NDT Procedures
32	R	R	P		Availability of qualified NDT personnel and display of their valid proficiency certificates
33	R	R	P		Calibration certificates of NDT Equipments
34	R	R	P		NDT Procedure Qualification Reports, as applicable
35	RW	RW	P		Perform NDT as per Approved Procedures
36	R	R	P		Ensure Proper Safety procedure during radiation
37	R	R	P		Interpretation of Results by ASNT-NDT-Level II Personnel
38	R	R	P		NDT Reports with result
39	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Repair Welding</b>
40	R	R	P		Availability of Approved Repair Welding Procedures



41	M	M	P	Ensure Qualified Welders for Repair and display of their test certificates
42	R	M	P	Marking of Repair area on Weld
43	M	M	P	Carbon Arc Gouging and Grinding Repair Area
44	R	W	P	Ensure complete removal of defect by Visual and MPI
45	M	M	P	Monitor Repair Welding variables once per shift
46	RW	RW	P	Visual Inspection after Repair Welding
47	R	R	P	Preparation of Weld Repair report
48	R	R	P	NDT of repaired area as applicable for Original Weld
49	R	R	P	Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
				<b>Field Joint Coating- Heat Shrink Sleeve</b>
50	R	R	P	Availability of Approved Field Joint Coating Procedure
51	R	M	P	Ensure joint is cleaned to require Grade as per the Procedure requirement. Ensure no burr or sharp cuts are made on Pipe surface
52	RW	RW	P	Visual Inspection of Heat Shrink Sleeve
53	R	R	P	Review Conformity of Batch Test certificates of Heat Shrink Sleeves
54	W	W	P	PQT of Heat Shrink Sleeve
55	R	M	P	Check pre-heating of joints is even and meets manufacturer's requirement
56	RW	RW	P	Visual Inspection after Heat Shrink Sleeve application
57	RW	RW	P	Peel Test shall be done at every 100 joints
58	RW	RW	P	Damages shall be repaired and inspected as per approved Procedure
59	R	M	P	Thickness measurement (One time per shift)
60	M	M	P	Calibration of Holiday Detector
61	RW	RW	P	Holiday testing of Joint as per the approved procedure
62	R	R	P	Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
				<b>HDPU Foam Infill</b>
63	R	R	P	Availability of Approved HDPU Foam infill procedure
64	R	R	P	Review Conformity of Batch Test certificates of HDPU Foam
65	W	W	P	PQT of HDPU Foam infill with dry density, saturated density and Compressive Strength test
66	RW	RW	P	Dry Density check for each batch on board
67	RW	RW	P	Visual Inspection of applied Foam infill
68	R	R	P	Ensure all Instruments are calibrated
69	R	R	P	Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC



					<b>Pipe lay Monitoring</b>
70	M	M	P		Pipeline laying records to show that pipeline is positioned within tolerances specified
71	R	R	P		Pipeline tension records being maintained
72	R	R	P		Load cell calibration reading monitoring and buckle detection
73	R	R	P		Required line pipes with Anodes are installed as per the Approved Alignment Drawings
74	R	R	P		Generate Pipe Book Record with all relevant details
75	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Pipeline Completion and Lay down</b>
76	W	W	P		Recovery of Buckle detector
77	W	W	P		Buckle detector gauge plate Inspection and Photograph for records
78	R	R	P		Lay down Head Inspection Report
79	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Pipeline Abandonment and Recovery</b>
80	R	R	P		Pipeline A&R winch has been tested and approved
81	W	W	P		Ensure all aspects of operations are carried out as per the approved procedure
82	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Additional for Risers</b>
83	M	R	P		Ensure documentation, drawings and procedures for riser installation including davit lift analysis etc. are latest Revision approved by ONGC. Ensure visual inspection of Monel sheathed riser pipe and NDT and pressure testing records and reports of monel joints.
84	W	W	P		Ensure risers are supported by hanger flanges and guided by non-frictional riser clamps. All bolting on the riser clamps are fully tightened double nuts on each end of the studs with Xylan coating
85	W	W	P		Ensure electrical continuity for cathodic protection of the clamps shall be provided between jacket and clamps
86	W	W	P		Removal of knee brace after riser installation is completed and clamps are tightened.
87	R	R	P		Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
					<b>Crossing Installation</b>
88	M	R	P		Ensure documentation, drawings and procedures for crossing installation are latest Revision approved by ONGC
89	M	M	P		Ensure availability of grout bags, cement etc. as per the design requirement and specification. Ensure Monitoring of grout density and grout compressive strength as per Company Specifications.



90	W	R	P	Ensure the length of the free span between the two supports shall not exceed the limits as mentioned in the Company approved documents
91	W	W	P	Detailed inspection of all the pipeline crossings 12 hours after completion of the installation. Ensure that there is no gap between pipe bottom and grout support to transfer loads coming on to pipeline to grout supports.
92	R	R	P	Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC
				<b>Free Span Correction</b>
93	H	R	P	Review of survey after completion of the pipeline installation to assess the span requiring correction
94	M	M	P	Ensure availability of grout bags, cement etc. as per the requirement of specification
95	W	R	P	Ensure the length of the free span between the two supports shall not exceed the limits as mentioned in the Company approved documents.
96	W	W	P	Detailed inspection of free span correction after completion of the installation. Ensure that there is no gap between pipe bottom and grout support to transfer loads coming on to pipeline to grout supports.
97	R	R	P	Ensure all records and reports are maintained for all activities for submission in As-built Dossier to ONGC

**P-Perform; M- Monitor; R- Review; W-Witness; RW-Random Witness; H-Hold**

**Note: The Activities listed above are not exhaustive. Inspection of other activities shall be carried out as per requirement of the FS & Design Criteria.**