



DS 32-173-
9 April 2010

Quality Programme - Manifolds

Project title:		
Purchase order title:		
Order/package no.:		
Vendor:		
A	REQUIREMENTS WITH TENDER	KEY
1	Assessment of technical capability.	
2	Appraisal of quality system.	
3	Review of typical SQP.	
4	Review of typical ITP.	
B	REQUIREMENTS PRIOR TO MANUFACTURE/CONSTRUCTION	
1	Design verification.	
2	Design validation.	
3	Formal design review.	
4	Approval of design documentation/drawings/specifications.	
5	Approval of SQP.	
6	Approval of ITP.	
7	Approval of PED implementation plan.	
8	Approval of reliability plan (including TRCs), RAD, qualification plan, and matrix.	
9	Approval of major subvendor and subcontractor ITPs.	
10	Approval of raw material manufacturing process and procedure, including test coupon location.	
11	Approval of weld procedures (including repair procedures, if applicable).	
12	Monitor new weld procedure qualification test, review NDT results and witness all associated mechanical tests.	
13	Witness preproduction qualification testing of insulation materials as applicable.	
14	Approval of NDT procedures.	
15	Approval of handling, preservation, and packaging procedures.	
16	Preproduction meeting.	
C	REQUIREMENTS DURING MANUFACTURE/CONSTRUCTION	
	SUBSEA MANIFOLD PARENT PIPE, INDUCTION BENDS, FORGED FITTINGS, TEES, FLANGES, AND SPOOLS (INCLUDING END CONNECTIONS)	
1	Examination and approval of manufacturing areas.	
2	Review and approval of welder and NDT operator qualifications.	
3	Verification of materials against certification.	
4	Witness alloy verification/PMI.	
5	Monitor material segregation and traceability.	
6	Monitor forging/forming operations, including quenching, for compliance to MPS.	
7	Monitor bending operations, review NDE, and witness associated mechanical testing.	
8	Surveillance during welding and weld overlay for compliance to the WPS.	
9	Monitor NDT operations (UT, MPI, DPI, hardness testing, and radiography).	
10	Visual examination of completed welds.	
11	Heat treatment to be checked and reports and charts to be stamped approved.	
12	Review NDT reports.	
13	Verification of overlay cladding thickness and visual inspection any internal dressing.	
14	Witness any SUT hydrostatic and gas pressure tests.	
15	Verification against Contractor drawings of close tolerance and/or critical dimensions.	
16	Verification against Contractor drawings of seal/interface surface finishes.	
17	Final visual, key dimensional inspection, and any continuity checks.	
18	Verify that marking has been applied in accordance with BP requirements.	
19	Check handling, preservation, and packaging (including identification).	
20	Examine protective coatings.	
21	Verify that all inspections and tests are complete.	
22	Issue inspection release note.	



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	SUBSEA MANIFOLD FABRICATION OF PROCESS PIPING AND STRUCTURAL STEELWORK
1	Review general safety and suitability of fabrication yard.
2	Review planned work methodology, assembly, and fabrication plan.
3	Verification of materials against certification.
4	Witness alloy verification/PMI.
5	Monitor that material is segregated, handled, and stored adequately to preserve integrity.
6	Review and approval of welder and NDT operator qualifications.
7	Verification of materials against certification.
8	Monitor weld consumable traceability, storage, and handling.
9	Surveillance during welding and weld overlay for compliance with the WPS.
10	Monitor NDT operations (UT, MPI, DPI, hardness testing, and radiography).
11	Visual examination of completed welds.
12	Monitor PWHT equipment calibration, setup, and HT.
13	Review hardness checks performed after PWHT.
14	Heat treatment to be checked and reports and charts to be stamped approved.
15	Review NDT reports.
16	Verification of overlay cladding thickness and visual inspection any internal dressing.
17	Verification against Contractor drawings of close tolerance and/or critical dimensions.
18	Check that anodes are correctly installed and verify electrical continuity with structure.
19	Check that required earthing (grounding) points are installed on the structure.
20	Verify that all lifting points have been installed and witness MPI of welds prior to load test.
21	Witness proof load tests on structure and any associated lifting equipment.
22	Witness MPI of lifting attachment points post load test.
23	Monitor final dimensional survey of structure.
24	Verify that the hydraulic system complies with fabrication requirements and lines are flushed clean to the required cleanliness level prior to pressure tests.
25	Review as built documentation for completeness prior to release for pressure test.
26	Witness all hydrostatic and gas pressure testing.
27	Monitor coatings preparation, application, final DFT, and holiday testing.
28	Witness any required coatings destructive tests (e.g., adhesion tests).
29	Monitor insulation preparation, application, final thickness, and hardness checks.
30	Witness any laboratory testing of insulation sampling (e.g., density and cure).
31	Monitor coatings and insulation post application inspection (e.g., positional and cleanup).
32	Verify that marking and tag numbers have been applied in accordance with requirements.
33	Witness final FAT and interface testing.
34	Verify that all inspections and tests are complete.
35	Issue inspection release note.