



Project No: 403060-00678

Project: Mabrouk Deep Phase 3

Procedure for 4 point bend SSC test

4-Point Bend Corrosion Testing shall be performed for SS 316L weld overlay for vessels V-2117, V-2118 and V-2119.

The test shall be performed as per SP-2185 and test simulated conditions as specified in below table:

Temperature °C	Design Pressure (bar)	ppCO ₂ bar	ppH ₂ S mbar	Chloride ppm
100 (Design temperature as per FEED MSR)	121	1.3	2.4	160,000

- The test procedure, acceptance criteria, test piece preparation, test stress level, etc shall be as per SP-2185. SP 2185 is attached for reference.
- The test shall be conducted in a PDO approved laboratory (list is attached for reference) and it shall be run in parallel with the vessel fabrication.
- Two 4 point tests shall be done one using ESW weld sample, 2 layers (1st pass ER309MOL and 2nd pass ER 316L) using production welding procedure or clad plate whichever is appropriate and the other using SMAW weld sample to represent clad restoration. These may be done along with PQR qualifications. The test shall be conducted on three test pieces for the two different samples (total of six specimens but two test only), for the purpose of certainty of the test results.
- The pH of the solution shall be fixed by the solution chemistry, the temperature and the gas composition.
- Test shall be done on samples subject to simulated 3 cycle PWHT condition.
- Material & Corrosion PDO Function Team shall be involved actively in monitoring the test program.
- Test sample shall meet all PQR qualification requirements like hardness, chemistry, ferrite number etc



PDO Approved Laboratory for 4 point bend SSC test

Corrosion Testing Laboratory Services	Intertek-CAPCIS	101433	Approved	01/07/2011	UEOC/UEOC1	22/06/2008	Manchester, England, UK	Previous name: CAPCIS
	Exova	103006	Approved	01/07/2011	UEOC/UEOC1	22/06/2008	UK	Previous name: Bodycote MTS LTD. & CO. LLC
	IFE		Approved	01/07/2011	UEOC/UEOC1	22/06/2008	Norway	
	SGS		Approved	01/07/2011	UEOC/UEOC1	22/06/2008	Netherlands	
	TWI		Approved		UEOC/UEOC1		Cambridge, England, UK	Provided Services to Harweel Project
	Sider Test S.r.l				UEOC/UEOC1		Piacenza, Italy	Approved for SSC and HIC