

Laboratory	Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	19.10.2014
Certificate Number	T-0795	Valid Until	04.06.2016
Last Amended on	-	Page	1 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
1.	MECHANICAL PROPERTIES OF MATERIALS			
1.	Ferrous and Non Ferrous Metals & High Strength Deformed Steel Bars (Tor Steel)	Tensile Test (YS, UTS, % E, % RA) (0.2%, 1% Yield Strength by Offset Method /Proof Stress)	ASTM A 370-12a ASTM E8-2011 IS 1608: 2005 ISO 6892-1: 2009 BS EN 895- 1995 ASTM B 557-2010 BS EN 10002 -1: 1990 IBR 2005	0.5 kN to 980 kN 1 % to 70 %
		Compression Test Break Load	ASTM E9- 2009	0.5 kN to 980 kN
2.	Welding Rods, Electrodes & Filler Metals a) Ferrous b) Non-Ferrous materials	Through Thickness Tensile Test (UTS,% RA)	ASTM A 770 -2003 BS EN 10164: 2004 (E) IS 814: 2004	0.5 kN to 980 kN
		All Weld Tensile Test (YS, UTS, % E, % RA) (0.2%, 1% Yield Strength by Offset Method/Proof Stress)	ASME SEC.II (Part C)- 2013 IS 1608: 2005 BS EN 876 - 1995	0.5 kN to 980 kN 1 % to 70 %
		Transverse Weld	API 1104: 2008 IS 2825: 1969	0.5 kN to 980 kN
		Tensile Test (YS, UTS,% E)	IBR RULE : 2013 ISO 4136 : 2001 (E) ASME SEC IX – 2013	0.5 kN to 980 kN 1 % to 70 %

Laboratory Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 19.10.2014

Certificate Number T-0795 **Valid Until** 04.06.2016

Last Amended on - **Page** 2 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Welding Rods, Electrodes & Filler Metals	Fracture Test	ASME SEC IX – 2013	0.5 kN to 980 kN
	a) Ferrous b) Non-Ferrous materials	Elevated Temperature Tensile Test at 100° - 1000°C (YS, UTS, % E, % RA)	ASTM E 21-2009 EN 10025 - 5	0.5 kN to 980 kN 1 % to 70 %
3.	Cladded Plate	Shear Strength	ASTM A 263-2012 ASTM A 264-2012 ASTM A 265-2012	0.5 kN to 980 kN
4.	Ferrous & Non-Ferrous materials, Tor Steel	Bend Test	ASTM E 290 - 2009 ASTM A 370 -2012a IS 1599: 85 (RA 2006) IS 1786: 2008 IBR RULE: 2005 IS 2329: 2005	Qualitative Mandrel Diameter (6,10,16,20,23,25, 28,32,33,36,38,40,43,48, 50,55,60,63,64,65,75,80, 84, 90,113,120,128,140, 160, 227) mm
5.	Ferrous & Non-Ferrous materials	Bend Test (For Weld)	IS 7310 (Part 1): 1974 IS 2825: 1969 ASTM E 190 - 1992 (RA 2008) ASME Sec. VIII (Div.1) ASME SEC IX- 2013 API 1104: 2008 AWS D1.1: 2010 IBR RULE : 2005 API 5L, BS EN 910 – 1996	Qualitative Mandrel Diameter (6,10,16,20,23,25, 28,32,33,36,38,40,43,48, 50,55,60,63,64,65,75,80, 84, 90,113,120,128,140, 160, 227) mm
		Rebend Test	IS 1786: 2008	Qualitative Mandrel Diameter (6,10,16,20,23,25, 28,32,33,36,38,40,43,48, 50,55,60,63,64,65,75,80, 84, 90,113,120,128,140, 160, 227) mm

Laboratory	Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	19.10.2014
Certificate Number	T-0795	Valid Until	04.06.2016
Last Amended on	-	Page	3 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Ferrous & Non-Ferrous materials	Nick Break Test (For Weld)	API 1104: 2008 IBR RULE: 2005 IS 2825: 1969	5 kN to 400 kN
		Brinell Hardness Test	IS 1500: 2005 ASTM E10: 2012 ASTM A 370 – 2012a BS EN ISO 6506-1: 1999	200 to 400 HBW
		Rockwell Hardness Test	ASTM E18 : 2012 ASTM A 370 – 2012a IS 1586 (Part 1, 2 & 3): 2012 BS EN ISO 6508-1: 2005	20 HRA to 88 HRA 55 HRB to 100 HRB 20 HRC to 70 HRC
		Vickers Hardness Test (Micro Hardness Tester)	IS 1501: 2002 ASTM E 384 - 2011 BS EN ISO 6507-1: 1997	(225 to 800) HV5 & HV10
		Portable Hardness Tester	ASTM E 110 - 2010	20 HRA to 88 HRA 55 HRB to 100 HRB 20 HRC to 70 HRC
		Impact Test - Izod	IS 1598: 1977 (RA 2003) BS 131 (Part 3): 1972	Upto 168 J at Room Temperature
		- Charpy [V-Notch]	IS 1757 : 2009 ASTM A 370-2012a ASTM E 23 – 2012c IBR RULE : 2005 BS EN 10045-1: 1993 BS EN 875 - 1995	Upto 300 J at Room Temp. to (-) 196 ⁰ C ± 2 ⁰ C
6.	Tubes & Tubes Sheets	Pull Out Test	ASME SEC VIII DIV.1 (2013)	20 kN to 1000 kN

Laboratory Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 19.10.2014

Certificate Number T-0795 **Valid Until** 04.06.2016

Last Amended on - **Page** 4 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
7.	Steel, Cu and Cu-alloys, Sheet, Strip & Pipe	Reverse Bend Test	ASTM A 370-2012a IS 1403:1993 (RA 2003) IS 1716: 1996	Qualitative Mandrel Diameter (6,10,16,20,23,25, 28,32,33,36,38,40,43,48, 50,55,60,63,64,65,75,80, 84, 90,113,120,128,140, 160, 227) mm
8.	Ferrous (Tubes & Pipes) Non-ferrous (Tubes & Pipes)	Flattening Test	ASTM A 370-2012a ASTM A 450 - 2010 ASTM A 513-2012 ASTM A 530 - 2012 ASTM A 1016 – 2011a ASTM B 111 - 2011 IS 2328 : 2005 IBR Rule : 2005	50 mm to 1000 mm Dia.
		Reverse Flattening Test	ASTM A 370 -12a. ASTM A 450 - 2010 & ASTM A 1016 - 2011	50 mm to 600 mm Dia.
		Flaring Test/Drift Test	ASTM A 370 – 12a ASTM A 513 - 2012 IS 2335 : 2005 ASTM B153 - 2011 IBR RULE : 2005 API 5L: 2013	Angle 60 ⁰ , 90 ⁰
9.	Boiler/ Pressure Tubes	Flange Test	IS 2330: 2005 ASTM A 370 – 2012a IBR – 2005	Above 80 mm OD Above 10 mm OD
		Crushing Strength	ASTM A 370 – 2012a	Up to 1000 kN

Laboratory Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 19.10.2014

Certificate Number T-0795 **Valid Until** 04.06.2016

Last Amended on - **Page** 5 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
10.	Sheet & Strip	Erichson Cupping Test	IS 10175 (Part 1): 1993 (RA 2003)	0.2 mm to 2 mm Thick & Width 90 mm or more
11.	Carbon and Alloy steel Nuts & Bolts	Proof Load Test	ASTM A 370 -2012 ISO 3506 - 1, ISO 3506 - 2002 IS 1367 (Part 6 & Part 3) (RA 2004)	Upto 800 kN
12.	Ferrous Material	Mass/Unit Length	IS 1786: 2008	0.5 kg to 30 kg
II. METALLOGRAPHY TEST				
1.	Ferrous Material	Micro-Structural Analysis	ASTM E3 - 2011 ASTM E407-07 E1 ASTM A262-2010	Magnification 50 X to 1000 X
		Average Grain Size	ASTM E 112-2012 IS 4748: 2009	Qualitative
		Macro Examination	IS 11371: 1985 (RA 2003) ASTM E381-2001 (RA 2012) ASTM E340-2000 (RA 2006) BS EN 1321 – 1997	Qualitative 10 X to 32 X Magnification
		IGC Practice – Method A & B.	ASTM G 28 – 03 (RA 2009)	Qualitative
		HIC Test	NACE MR 0175	Qualitative
		SSCC Test	NACE TM0284 – 03 NACE TM0177 – 2005 ASTM G 38 (RA 2007) (Method ‘A’ & ‘C’) a) Room Temp. Atmospheric pressure b) 90° C / 120° C & 16 Bar pressure	Qualitative
		SSCC Test	NACE TM0177 – 2005 ASTM G 39 (RA 2000) (Method ‘B’) –Four Point Ben	Qualitative

Laboratory Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 19.10.2014

Certificate Number T-0795 **Valid Until** 04.06.2016

Last Amended on - **Page** 6 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Ferrous Material	Ferric Chloride Pitting Test (Method A, C, E)	ASTM G 48 – 03 (RA 2009)	Qualitative
		Ferric Chloride Crevice Test (Method B, D)	ASTM G 48 – 03 (RA 2009)	Qualitative
		Chloride Stress Corrosion Cracking Test (MgCl ₂)	ASTM G 36 – 94 (RA 2006)	Qualitative
2.	Case-hardened Steel	Estimation Of Case Depth (Microscopic Method)	IS 6416: 1988 (RA 2003)	0.01 mm to 1.00 mm
3.	Steel	Determination Of Inclusion Content (Method A & D)	IS 4163: 2004 ASTM E45 - 2013 ISO 4967 - 1998	100 X magnification
		Determination Of Depth Decarburization	IS 6396: 2000 ASTM E1077-2001 (RA 2005)	0.01 mm to 1.00 mm at 100X Magnification
4.	Cast Iron	Microstructure of Graphite in Cast Iron	IS 7754: 1975 (RA 2003)	Magnification 50 X to 100 X
5.	Steel Casting	Ferrite Test (In Percentage & Number)	ASTM A 799 -2010	20 % to 100 % 0 to 100 Nos.
6.	Steel Casting, austenitic Alloy	Ferrite Test (In Percentage & Number)	ASTM A 800 – 2010	20 % to 100 % 0 to 100 Nos.
7.	Determining Volume Fraction by systematic manual point count	Ferrite Test	ASTM E 562 – 2011	Qualitative

Laboratory Offshore Testing and Inspection Services (I) Pvt. Ltd., W-147, MIDC, Pawane, Thane Belapur Road, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 19.10.2014

Certificate Number T-0795 **Valid Until** 04.06.2016

Last Amended on - **Page** 7 of 7

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
8.	Austenitic Stainless Steel	IGC Practice – A, B, C, E & F.	ASTM A 262 – 2010	Qualitative
9.	Ferric austenite & Ferric austenite duplex stainless steel	IGC Method – A, B, C.	EN ISO 3651-1 & EN ISO 3651-2	Qualitative
10.	Duplex Stainless Steel	Detection of Detrimental Intermetallic Phase Method – A, B, C.	ASTM A 923 –2008	Qualitative

-X-X-X-X-X-X-X-X-X-X-X-X-