





**DRAFT QUALITY ASSURANCE PLAN (QAP)**

**Enclosure-14**

<b>CUSTOMER</b>		<b>MAZAGON DOCK SHIPBUILDERS LTD.</b>		<b>QUALITY ASSURANCE PLAN</b>		JOB No.	Sheet No <b>1 of 2</b>	REV. No.- <b>R0</b>				
<b>ENGINEER</b>		<b>SEA SYST ENGINEERING (INDIA) PVT LTD.</b>		Project :				File Ref:				
<b>CONTRACTOR</b>		-		<b>FABRICATION OF LIFTING BEAMS AND DELIVERY TO MAZAGON DOCK SHIPBUILDERS LTD.</b>				Document No <b>MDL/SLF/SSE/TD/LB/QAP</b>				
				Prepared by : Sea Syst Engineering (I) Pvt. Ltd.				Date: 02.12.2017				
				Checked by : MDL				Inspection Place <b>Contractor's Premises</b>				
				Item / Product <b>FABRICATION OF LIFTING BEAMS AND DELIVERY TO MAZAGON DOCK SHIPBUILDERS LTD.</b>								
SR. NO	COMPONENTS / OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QTY OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT RECORDS	INSP. Agency			REMARKS
									M	S	MDL	
1	2	3	4	5	6	7	8	9	10			11
<b>1 Material Identification and Inspection of all structural steel material .</b>												
1.1	Steel plates	Physical & Chemical properties.	MAJOR	MTC / Samples from the raw materials shall be tested/ analyzed in approved Third Party lab.	Each lot/ Heat/ Batch	Approved drawing/Material Specification	Plate specification as per approved drawing	Test report	P	V	R	Material traceability record to be maintained by yard.
1.2	Steel Plates	Lamination Check	MAJOR	MTC	100%	ASME SA578 LEVEL B	ASME SA578 LEVEL B	Test report	P	V	R	
<b>2 Welding Procedure Qualification</b>												
2.1	Welding Electrodes and Other Consumables	Physical & Chemical properties.	MAJOR	MTC	Before start of Fabrication and periodic Verification during Fabrication	Material Specification	ASME SEC II PART C	MTC/External Lab Report	P	V, H	R	
2.2	Qualification of WPS,PQR	Essential Variables	MAJOR	IACS UR W28	Before start of Fabrication	IACS UR W28	IACS UR W28	Approved WPS & PQR records	P	V, H	R	
2.3	Welder's Qualification	Essential Variables	MAJOR	IRS rules	Before start of Fabrication	IRS rules	IRS rules	Welders Qualification Report	P	V, H	R	Qual. Record of Welders to be maintained by yard.
<b>3 Panel and Unit Fabrication</b>												
3.1	Marking and Cutting of Plates	Dimensional Check	MAJOR	Visual	First 5 lifting beams and random thereafter	Fabrication Drawing and Approved WPS	Fabrication Drawing and Approved WPS/ IS 800	Daily Status Report/Inspection Report	P	W	R	
		Edge Preparation	MAJOR	Visual	First 5 lifting beams and random thereafter	Approved Drawing	IRS Norms/approved Welding plan	Inspection Report	P	W	R	
3.2	Fit-up	Dimensional Check	MAJOR	Visual	First 5 lifting beams and random thereafter	Fabrication Drawing and Approved WPS	Fabrication Drawing and Approved WPS	Daily Status Report/Inspection Report	P	W, H	R	
3.3	Panel Fit-up survey	Dimensional Check	MAJOR	Visual	First 5 lifting beams and random thereafter	Fabrication Drawing and Approved WPS	Fabrication Drawing and Approved WPS	Daily Status Report/Inspection Report	P	W	R	
3.4	NDT	Weld Check	MAJOR	Visual	100%	Fabrication Drawing and Approved WPS/ IS 823	Fabrication Drawing and Approved WPS/ IS 823	Daily Status Report/Inspection Report	P	P, H	R	
		DPT	MAJOR	Fillet Welds	10%	ASME BPVC Sec V	ASME BPVC Sec V	Daily Status Report/Inspection Report	P	W, H	R	DPT to be performed by Level II technician
		RT / UT	MAJOR	Butt Welds	10%	ASME BPVC Sec V	ASME BPVC Sec V	Inspection Report	P	W, H	R	UT to be performed by Level II Technician, RT to be performed by BARC approved vendor
<b>4 Blasting</b>												
4.1	Internal Surface Preparation	Surface roughness	MAJOR	Roughness Measurement to Swedish Sa 2.5	Random as required	Approved Drawing/ISO 8501-1/Paint Requirements	Approved Specifications/ISO 8501-1/Paint Requirements	Inspection Report	P	W	R	Paint manufacturer to be involved for verifying surface roughness
<b>LEGENDS</b>								<b>Approved by Name, Sign of authority &amp; seal</b>				
MTC: Manufacturers Test Certificate MIR: Manufacturer inspection report P : Perform W : Witness H: Hold Point			V: Verification M : Manufacturer R: Review of yard records/ Random verification S : Sea Syst Engineering (I) Pvt. Ltd. MDL : Mazagon Dock Shipbuilders Ltd			Prepared By(Subcontractor)		Reviewed By(Sea Syst Eng.Pvt. Ltd.)		Approved By(MDL)		

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CONTRACTOR		-		FABRICATION OF LIFTING BEAMS AND DELIVERY TO MAZAGON DOCK SHIPBUILDERS LTD.				Document No. MDL/SLF/SSE/TD/LB/QAP				
				Prepared by : Sea Syst Engineering (I) Pvt. Ltd.				Date: 09.11.2017				
				Checked by : MDL				Inspection Place Contractor's Premises				
				Item / Product FABRICATION OF LIFTING BEAMS AND DELIVERY TO MAZAGON DOCK SHIPBUILDERS LTD.								
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									M	S	MDL	
1	2	3	4	5	6	7	8	9	10			11
5	<b>Painting</b>											
5.1	Internal Paint	Colour	MAJOR	Visual	Completed Unit	As per Contract Agreement/Paint Manufacturer's Certificate	As per Contract Agreement/Manufacturer's Certificate	Inspection Report	P	W	R	Paint manufacturer to be involved for checking colour
		Dry Film Thickness	MAJOR	Thickness measurement	As per Paint Manufacturer's Recommendations	As per Contract Agreement/Paint Manufacturer's Certificate	As per Contract Agreement/Paint Manufacturer's Certificate	Inspection Report	P	W	R	Paint manufacturer to be involved for ensuring required DFT
6	<b>Assembly</b>											
6.1	Unit Assembly	Fit-up/Dimensions/Orientations	MAJOR	Visual	First 5 lifting beams and random thereafter	As per Approved Drawings	As per Approved Drawings	Inspection Report	P	W, H	R	
		Welding	MAJOR	Visual/NDT as per Item 3.4	100%	As per Approved Drawings	As per Approved Drawings	Test report	P	W, H	R	
6.2	Blasting and Painting	Blasting	MAJOR	Roughness Measurement to Swedish Sa 2.5	100%	As per Approved Drawings	As per Approved Drawings	Inspection Report	P	W	R	Paint manufacturer to be involved for verifying surface roughness
		Painting and touch-up	MAJOR	Thickness measurement	100%	As per Approved Drawings	As per Approved Drawings	Inspection Report	P	W	R	Paint manufacturer to be involved for ensuring required DFT
6.3	Load Test	Deflection Measurement	MAJOR	Load Test	2 lifting beams	As per approved testing methodology and drawing	As per Approved Tests and Trials Schedule	Test Report	P	W, H	W	Testing agency to be involved for carrying out the test and certifying the results
7	<b>Weight Measurement</b>											
7.1	Complete Lifting Beams	Weight Recording	MINOR	Weighing	100%	Scope of Work/Drawing	Scope of Work/Drawing	Inspection Report	P	W	R	
8	<b>Documentation</b>											
8.1	Reports/MTC/Lab Reports/Inspection Reports	Applicability and completeness	MAJOR	Visual	100%	Approved Specifications	Approved Specifications	Report	P	V	V	
<b>LEGENDS</b>							Approved by Name, Sign of authority & seal					
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