



ALCOCK ASHDOWN (GUJARAT) LIMITED
BHAVNAGAR

PROJECT : Hydrographic Survey Vessel
YARD NO. : 257 to 262
OWNER : Indian Navy
TITLE : Hull Quality Assurance Plan

INSPECTION, SURVEY AND TRIALS DURING THE CONSTRUCTION OF THE VESSEL
Abbreviations used in attached sheet.

QC	Quality Control (AAGL)
CS	Classification Society (IRS)
WOT	Warship Overseeing Team
W	Witness (AAGL will inform the WOT regarding inspection well in advance and thereafter it will be the responsibility of WOT for witnessing the inspection work.)
R	Random Check
M	Monitoring (The responsibility of monitoring will be entirely on WOT. No rework etc will be done in just because the work is not monitored by WOT.)

Prepared By	Checked By	Approved By	Revision No.	Date
AAGL-QC	-	WOT,IRS	0	03.11.2007



SL NO.	STAGES	RESPONSIBILITY	CONTROL DOCUMENT	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	DEPT/ SUB CONTRACTOR	QA	IRS	WOT
1	DRAWINGS a) Basic drawings b) Structural drawings c) System drawings d) Electrical drawings e) Statutory drawings f) Production drawings	Designer (STS)	As per the list provided by the designer	IRS rules		Design dept		W	
HULL CONSTRUCTION									
2	Steel & section								
2.1	Receipt Inspection of Material at Stores (Identity of Plates, Sections, Castings, items, etc. correlate with relevant Purchase orders, Specifications, and Inspection & Test Certificates. Check conformance with specified requirements).	Store	Purchase order, Drgs. & Material Specification	DMRL Spec	Record of Inspection H/IR/001	Store	W		M
2.2	Record Location of Storage.	--do--	Register		STORE REPORT	STORE			W
	Storage & Preservation of Plates	--do--	--do--					R	



3	STEEL PREPARATION								
3.1	Inspection of blasting / pickling	CNC	Maintain the register	Standard rule	Record of inspection	SUB CONTRACT	W	R	M
3.2	Inspection of priming	CNC	Maintain the register	Standard rule	Record of inspection	SUB CONTRACT	W	R	W
4	CUTTING OF THE COMPONENTS								
4.1	Check marking for dimensional accuracy, and correctness of following before commencement of cutting								
	Panel plates	CNC	Nested drwgs	Approved drwgs	CNC record	CNC	R		M
	Floor plates	--do--	--do--	--do--	--do--	--do--	--do--		--do--
	girders	--do--	--do--	--do--	--do--	--do--	--do--		--do--
	Web frames	--do--	--do--	--do--	--do--	--do--	--do--		--do--
	scallops	--do--	--do--	--do--	--do--	--do--	--do--		--do--
	Misc. components	--do--	--do--	--do--	--do--	--do--	--do--		--do--
4.2	check dimensional accuracy , edge preparation , burr removal , grinding	--do--	--do--	--do--	--do--	--do--	--do--	R	--do--
4.3	Check identification marking on cut	--do--	--do--	--do--	--do--	--do--	W		--do--



5	ROLLING AND FORMING								
5.1	Checking of rolled/ formed plates and sections as per templates	HULL SUB CONTRACTOR	STRUCTURAL DWG	standard	Inspection report	PROD	W	R	R
6	WELDING								
6.1	Preparation of WPS as per DMRL specification	Hull Subcontractor	DMRL Spec	DMRL Spec	WPS REPORT	PROD	W	W	
6.2	Establishment of PQR for WPS	Hull Subcontractor	IRS SPEC	IRS rule	PQR REPORT	PROD	W	W	
6.3	Certification of Welders	Hull Subcontractor	IRS SPEC	IRS rule	IRS/ CERTIFICATE	PROD	W	W	
6.4	Welding consumable (Sample testing for conformance to the specification/testing certificate)	Hull Subcontractor	IRS approved certificate	IRS rule			W	R	CHP
6	FABRICATION STAGE								
6.1	Fabrication of Components Fitup and Dimensional check prior to welding.	Hull Subcontractor	WLD/Relevant Drg	IRS STD RULE	RECORD OF INSPECTION	PROD	W	R	M
6.2	Inspection of Components and Dimensional check during welding.	Hull Subcontractor	--do--	--do--	--do--	--do--	W		M



7	ASSEMBLY OF PANELS/ UNITS								
7.1	Preparation of skids (checks centre-line, waterlines, buttock lines, check lines, keel heights, shrinkage allowances, seam & butt positions, etc.)	Hull Subcontractor	WLD/Relevant Drg	IRS STD RULE	INSPECTION REPORT	PROD	W		M
7.2	Fitup and Dimensional check of panel/unit/blk after assembly and prior to welding (including green edges & distortion control measures)	Hull Subcontractor	--do--	--do--	--do--	--do--	W	R	M
7.3	Inspection of panel / unit / blk during welding	Hull Subcontractor	AS PER WPS	PQR	--do--	--do--	W	R	M
7.4	Final Inspection of panel / unit / blk after welding, grinding, etc. (before releasing for erection). Report to indicate green edges also.	Hull Subcontractor	WELDING SCHEDULE	IRS RULE	--do--	QC	W	R	M
7.5	Check overall dimension and accuracy	Hull Subcontractor	WELDING SCHEDULE	IRS RULE	--do--	QC	W	R	W
7.6	Record of weights (check that the actual weight is comparable to the calculated)	Production				Production	W	-	M



8	ERECTION OF THE PANEL/ UNITS TO MAKE BLOCKS									
8.1	Check alignment (Centre-line, waterline, transverse and longitudinal levels, keel heights, pre-setting, etc. and overall dimensions)	Hull Subcontractor	PRODN DWG	STANDARD	REPORT	PROD	W	R	M	
8.2	Fit up of Unit Joints at erection berth prior to welding (after fitting necessary supports for welding).	Hull Subcontractor	--do--	--do--	--do--	--do--	W	R	M	
8.3	Inspection during welding for correctness of welding procedure and welder identification etc	Hull Subcontractor	Welding schedule	IRS RULE	--do--	--do--	W	R	M	
8.4	Final inspection of unit / panel/ Blk joints after running welding.	Hull Subcontractor	APPROVED DWG	IRS RULE	--do--	--do--	W	R	M	
9	NON DESTRUCTIVE TESTING (NDT)									
9.1	Radiography. (as per appd. NDT plan, to be carried out at critical areas)	Hull Subcontractor	Radiograph Records	IRS RULES	RECORD OF INSPECTION	QC	W	W	M	
9.2	Dye Penetrate Testing. (as per appd. NDT plan, extent of DP to cover 100% of critical area and 60% of the balance)	Hull Subcontractor	DP Report	--do--	--do--	--do--	W	R	M	



9.3	Ultrasound Test	Hull Subcontractor	UT Report	--do--	--do--	--do--	W	R	M
9.4	Carry out NDT of welds on units / panels as required	Hull Subcontractor	NDT Plan	IRS Rule	Inspection Report	QC	W	R	M
10	FINAL DIMENSIONAL CHECK OF ASSEMBLY AS PER THE APP. DWG								
11	DRY SURVEY								
11.1	Dry Survey of Tanks./ Void space	Hull Subcontractor	Structural Drgs. Record of inspection & Class reports			PROD	W	W	M
11.2	Dry Survey of Compartment / Spaces.	Hull Subcontractor	--do--			PROD	W	W	M
11.3	Dry Survey of Hull appendages like Log, Echo sounder, ICCP Cathodic,	Hull Subcontractor	Structural Drgs. Record of inspection			PROD	W	W	M
11.4	Inspection of ICCP, Bilge keel Drain plugs, sea chest etc	Hull Subcontractor	As per the plan	IRS RULE	INSPECTION REPORT	PROD	W	W	M
12	HULL TESTING								
12.1	Leak testing of compartments/void spaces	Hull Subcontractor	Testing Plan Record of inspection	IRS RULE/ TESTING PLAN	INSPECTION REPORT	PROD	W	W	M



			02/QSF/08, Dry survey record						
12.2	Hose testing of skin fitting	Hull Subcontractor	Testing plan	IRS RULE/ TESTING PLAN	INSPECTION REPORT	PROD	W	W	M
12.3	Water Hose Test of Hull Bosses - Echo sounders, Log, ICCP, etc.	Hull Subcontractor	TESTING PLAN	IRS RULE/ TESTING PLAN	INSPECTION REPORT	PROD	W	W	M
13	FINAL DIMENSIONAL CHECK								
13.1	Final keel sighting (Before disturbing the vessel)	Hull Subcontractor	Record to be maintained	standard	Inspection report	PROD	W	W	M
13.2	Checking of Principle Dimensions. (To measure the overall length, moulded breadth & Depth)	Hull Subcontractor	Record to be maintained	--do--	--do--	--do--	W	W	M
13.3	Draft Marking.	Hull Subcontractor	Relevant Drg. Record of inspection 02/QSF/08,	IRS RULE	--do--	--do--	W	W	M
13.4	Fit up and Dimensional Check of Draft Mark Letters.	Hull Subcontractor	--do--	STANDAR D	--do--	--do--	W	W	M
13.5	Marking of Boot top area	Hull Subcontractor	--do--	--do--	--do--	--do--	W	W	M



14	FAB & INSTALLATION OF MACHINERY/ EQUIPT. SEATINGS.								
14.1	Main Engines & Gear Boxes.	HULL SUBCONTRACT	DMRL SPEC	IRS	RECORD OF INSPECTION	PROD	W	W	M
14.2	Generators (Main D. G. Sets, R.O Plant, Emergency D.G. Set)	--do--	--do--	--do--	--do--	--do--	W	W	M
14.3	Stern/Steering Gear Equipt.	--do--	--do--	--do--	--do--	--do--	W	W	M
14.4	Auxiliary Machinery.	--do--	--do--	--do--	--do--	--do--	W	W	M
14.5	Capstans & Windlass.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.6	Deck Cranes, Davits, Derricks, Work Boat etc.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.7	Compressors/Separator.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.7	Pumps. (Bilge, Ballast, Emergency Fire etc)	--do--	--do--	--do--	--do--	--do--	W	R	M
14.8	F.W. Generating Plants.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.9	L.O. / F.O. Purifiers.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.10	Work Shop Equipments / Deck fittings	--do---	--do--	--do--	--do--	--do--	W	R	M



14.11	A/C Machy. / Equipts.	--do--	--do--	--do--	--do--	--do--	W	R	M
14.12	Securing arrangement A-bracket, Prop guard, eddy plate	--do--	--do--	--do--	--do--	--do--	W	R	M
14.13	Final Inspection of Seating after welding.	--do--	--do--	--do--	--do--	--do--	W	R	M
15	INSTALLATION OF RUDDER & STERN GEAR								
15.1	Sighting of the keel (rudder)	SUB CONTRACTOR	APPROVED DWG	IRS RULE	RECORD OF INSPECTION	PROD	W	W	W
15.2	Inspection of rudder assembly	SUB CONTRACTOR	APPROVED DWG	IRS RULE	RECORD OF INSPECTION	PROD	W	W	M
15.3	Inspection of the rudder clearance	--do--	--do--	--do--	--do--	--do--	--do--	--do--	W
15.4	Sighting of the keel (stern gear)	SUB CONTRACTOR	APPROVED DWG	IRS RULE	RECORD OF INSPECTION	PROD	W	W	W
15.5	Inspection of the stern gear arrangement	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
15.5	Inspection of the stern gear clearance	--do--	--do--	--do--	--do--	--do--	--do--	--do--	W



16	PAINTING								
16.1	Surface preparation in Tanks, Void Spaces Engine Room & Bilges (Shot blasting/ Cleaning)	Hull Subcontractor	Painting Scheme Record of Inspection 02/QSF/08		--do--	--do--	W	R	M
16.2	Surface preparation in Compartments and Spaces (Shot blasting / Cleaning)	Hull Subcontractor	--do--		--do--	--do--	--do--	--do--	--do--
16.3	Surface preparation at Outer Hull Below water line (including boot top area) (Shot blasting / Cleaning)	Hull Subcontractor	--do--		--do--	--do--	--do--	--do--	--do--
16.4	Surface preparation at Above water line (including Super structure weather decks) (Shot blasting / Cleaning)	Hull Subcontractor	--do--		--do--	--do--	--do--	--do--	--do--
16.5	Metal Spraying in Tanks, Void Spaces, Engine Room & Bilges.	Hull Subcontractor	--do--		--do--	--do--	--do--	--do--	--do--
16.6	Metal Spraying in Compartments and Spaces (Where applicable)						--do--	--do--	--do--



16.7	Painting in Tanks, Void Spaces Engine Room & Bilges (1st coat)	PAINTING SUBCONTRACT	APPROVED PAINTING SCHEME	DMRL SPEC	INSPECTION REPORT	PROD	--do--	--do--	--do--
16.8	Painting in Tanks, Void Spaces Engine Room & Bilges (2 nd coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.9	Painting in Tanks, Void Spaces Engine Room & Bilges (3 rd coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.10	Painting in Compartments and Spaces/Machinery Seating (1st coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.11	Painting in Compartments and Spaces/ Machinery Seating (2 nd coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.12	Painting in Compartments and Spaces/ Machinery Seating (3 rd coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.13	Painting in Compartments and Spaces/ Machinery Seating (4 th coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--



16.14	Painting at Outer Hull Below water line including boot top area –(1st Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.15	Painting at Outer Hull Below water line (including boot top area – (2 nd Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.16	Painting at Outer Hull Below water line including boot top area – (3 rd Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.17	Painting at Outer Hull Below water line including boot top area – (4 th Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.18	Painting at Outer Hull Below water line including boot top area – (5 th Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.19	Painting at Above water line including super structure, weather decks (1st Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.20	Painting at Above water line including super structure, weather decks (2 nd Coat)	PAINING SUBCONTRAC T	APPROVED PAINTING SCHEME	IRS/ DMRL RULE	INSPECTION REPORT	PROD	--do--	--do--	--do--



16.21	Painting at Above water line including super structure, weather decks (3 rd Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.22	Painting at Above water line including super structure, weather decks (4 th Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--
16.23	Painting at Above water line including super structure, weather decks (5 th Coat)	--do--	--do--	--do--	--do--	--do--	--do--	--do--	--do--