

P 6605

Fast Rescue Boat



SYSTEM SEGMENT SPECIFICATION

Version 2.0
Date: 2013-06-28

Table of contents:

1	Scope	4
1.1	IDENTIFICATION	4
1.2	SYSTEM OVERVIEW	4
1.2.1	General	4
1.2.2	System concept	4
1.2.3	Interfacing systems	4
1.2.4	Main functionality	4
1.3	DOCUMENT OVERVIEW	4
1.4	INTERPRETATION OF REQUIREMENTS AND TERMINOLOGY	5
2	Applicable Documents	6
2.1	DOCUMENTS FORMING PARTS OF THIS SPECIFICATION	6
2.2	DOCUMENTS REFERENCED TO IN THIS SPECIFICATION	6
3	Requirements	7
3.1	FUNCTIONAL AND PERFORMANCE REQUIREMENTS	8
3.2	SYSTEM CAPABILITY REQUIREMENTS	8
3.2.1	General	8
3.2.1.1	Type approval	8
3.2.1.2	Interchange ability	9
3.2.1.3	Environment	9
3.2.1.4	Noise levels 1	9
3.2.1.5	Noise levels 2	10
3.2.1.6	Noise levels 3	10
3.2.2	Main dimensions and capacities	10
3.2.2.1	Dimensions	10
3.2.2.2	Speed 1	11
3.2.2.3	Speed 2	11
3.2.2.4	Watertight integrity (NA)	11
3.2.3	Hull	11
3.2.3.1	Hull Materials (New text)	11
3.2.3.2	Hull Frame Materials	12
3.2.3.3	Pressure testing of hull tanks (NA)	12
3.2.3.4	Watertight compartments	12
3.2.3.5	Hull Materials (New requirement)	12
3.2.4	Fender and protection systems	13
3.2.4.1	Fender type	13
3.2.4.2	Fender covering	13
3.2.4.3	Fender protection	13
3.2.4.4	Bow keel protection (New text)	14
3.2.4.5	Water jet protection and divers platform	14
3.2.4.6	Water jet protection platform rubber	14
3.2.5	Lifting arrangement	14
3.2.5.1	Lifting hook and painter line I	14
3.2.5.2	Lifting hook and painter line II	15
3.2.5.3	Lifting hook, hinged connection	15
3.2.5.4	Lifting frame attachment	15
3.2.5.5	Lifting frame	16
3.2.5.6	Relief point I	16
3.2.5.7	Relief point II	16
3.2.6	Propulsion	16
3.2.6.1	Engine	16
3.2.6.2	Water jet I	17
3.2.6.3	Water jet II	17
3.2.6.4	Water jet III	17
3.2.6.5	Water jet IV	18
3.2.6.6	Protection and cleaning of water jet	18
3.2.6.7	Inspection hatch for the water jet I	18
3.2.6.8	Inspection hatch for the water jet II	18
3.2.6.9	Steering system and water jet	19
3.2.6.10	Steering wheel ball	19
3.2.6.11	Fuel	19
3.2.6.12	Seawater intake strainer	19

3.2.6.13	Cover for the seawater intake strainer	20
3.2.6.14	Access in machinery space	20
3.2.6.15	Machinery space cover.....	20
3.2.6.16	Pump for engine oil change.....	21
3.2.6.17	Exhaust system, freezing	21
3.2.6.18	Exhaust system, outlet	21
3.2.6.19	Engine heater	22
3.2.6.20	Engine heater type	22
3.2.7	Deck space.....	22
3.2.7.1	Deck storage	22
3.2.7.2	Bow boarding platform I.....	22
3.2.7.3	Bow boarding platform II.....	23
3.2.7.4	Rescue frame	23
3.2.8	Electrical power system.....	23
3.2.8.1	General information.....	23
3.2.8.2	Electrical installations	24
3.2.8.3	Power supply	24
3.2.8.4	Power supply connections I.....	24
3.2.8.5	Power supply connections II.....	24
3.2.8.6	Dynamo	25
3.2.8.7	Batteries I	25
3.2.8.8	Batteries II	25
3.2.8.9	Electrical Connections I	26
3.2.8.10	Electrical Connections II	26
3.2.8.11	Fans I	26
3.2.8.12	Fans II	26
3.2.8.13	Searchlights.....	27
3.2.8.14	Handheld searchlights.....	27
3.2.8.15	12V sockets and brackets for searchlights	27
3.2.8.16	Locations of brackets for Searchlights	27
3.2.8.17	Storing of searchlights	28
3.2.8.18	Bow searchlights	28
3.2.8.19	Protection of bow searchlights.....	28
3.2.8.20	Working lights.....	28
3.2.8.21	Internal lights	29
3.2.8.22	Bilge pump I.....	29
3.2.8.23	Bilge pump II.....	29
3.2.8.24	Main power control switch I	29
3.2.8.25	Main power control switch II	30
3.2.8.26	Anti-icing system I	30
3.2.8.27	Anti-icing system II	30
3.2.8.28	Anti-icing system III	31
3.2.9	Communication and navigation	31
3.2.9.1	VHF radio I	31
3.2.9.2	VHF radio II	31
3.2.9.3	VHF radio III	32
3.2.9.4	VHF radio IV	32
3.2.9.5	VHF radio V	32
3.2.9.6	Helmsman's helmets I	32
3.2.9.7	Helmsman's helmets II	33
3.2.9.8	AIS I.....	33
3.2.9.9	AIS II.....	33
3.2.9.10	Electronic Chart System (ECS) / GPS Plotter / sounder I.....	33
3.2.9.11	Electronic Chart System (ECS) / GPS Plotter / sounder II.....	33
3.2.9.12	Electronic Chart System (ECS) / GPS Plotter / sounder III.....	34
3.2.9.13	Electronic Chart System (ECS) / GPS Plotter / sounder IV	34
3.2.9.14	Electronic Chart System (ECS) / GPS Plotter / sounder V	34
3.2.9.15	Survival craft radar transponder (SART)	35
3.2.9.16	Navigation lights I	35
3.2.9.17	Navigation lights II	35
3.2.9.18	Navigation lights III	35
3.2.9.19	Blue light.....	36
3.2.10	Painting (new text).....	36
3.2.10.1	General Requirements	36
3.2.10.2	Pre-treatment.....	36
3.2.10.3	Application methods	37
3.2.10.4	Coating	37

3.2.10.5	Painting Schemes.....	37
3.2.10.6	Marking.....	38
3.2.11	Self-righting system.....	38
3.2.11.1	CO2 bottle	38
3.2.11.2	Self-righting rack.....	38
3.2.11.3	Protection of the self-righting rack	39
3.2.12	Cockpit and seating arrangement	39
3.2.12.1	Seats I	39
3.2.12.2	Seats I	39
3.2.12.3	Seating II	40
3.2.12.4	Cockpit seating I	40
3.2.12.5	Cockpit seating II	40
3.2.12.6	Cockpit windshield I.....	40
3.2.12.7	Cockpit windshield II.....	41
3.2.12.8	Cockpit windshield III.....	41
3.2.12.9	Cockpit windshield IV	41
3.2.12.10	Cockpit panel I.....	41
3.2.12.11	Cockpit panel II.....	42
3.2.12.12	Cockpit switch panel I.....	42
3.2.12.13	Cockpit switch panel II.....	42
3.2.12.14	Cockpit switch panel III.....	42
3.2.12.15	Cockpit instrumentation I.....	43
3.2.12.16	Cockpit instrumentation II	43
3.2.12.17	Levers I.....	43
3.2.12.18	Levers II.....	44
3.2.12.19	Dead man's switch	44
3.2.13	Diesel tank(s).....	44
3.2.13.1	Refuelling	44
3.2.13.2	Refuelling II.....	44
3.2.13.3	Refuelling III.....	45
3.2.13.4	Diesel system	45
3.2.13.5	Drainage	45
3.2.14	Towing and mooring.....	46
3.2.14.1	Bow towing hook	46
3.2.14.2	Stern towing hook I.....	46
3.2.14.3	Stern towing hook II.....	46
3.2.14.4	Mooring	46
3.2.15	Fire extinguishing	47
3.2.15.1	Fixed fire system	47
3.2.15.2	Fire extinguisher	47
3.2.16	Documentation	47
3.2.16.1	Documentation content general requirements	48
3.2.16.2	Documentation language.....	48
3.2.16.3	System Handbooks	48
3.2.16.4	Technical handbooks.....	48
3.2.16.5	Figures/drawings	49
3.2.16.6	Certificates.....	49
3.2.16.7	Codifications data for Spare parts	49
3.2.16.8	International system of units (SI)	50
3.2.16.9	ISO symbols	50
3.2.16.10	Documentation format	50
3.2.16.11	Binding format	50
3.2.16.12	Maintenance planning data	51
3.2.16.13	Spare parts.....	51
3.2.16.14	Consumables.....	52
3.2.16.15	Labelling for storage of spare parts and consumables	52

1 Scope

1.1 Identification

This Specification establishes the performance, design, development and verification requirements for the Fast Rescue Boats (FRB).

1.2 System overview

1.2.1 General

The system's main task is to replace the existing FRBs.

1.2.2 System concept

The FRBs are combined rescue boats and working boats, and are in use on a daily basis on board in the Coast Guard vessels.

1.2.3 Interfacing systems

The mother ships have davits with single point connection for the FRBs, and painter line in the bow. Most of the mother ships have integrated boat docks in the ship structure with open side and under deck, and the space available, limits the size of boat we can get.

1.2.4 Main functionality

The Norwegian Coast Guard (CG) and Royal Norwegian Navy (RNON) use Fast Rescue Boats (FRB) as a combined FRB and work boat. The nature of operations imposes severe stress to the FRBs. In order to maintain a high degree of operational availability and security for the users, the FRB must have high degree of reliability, performance and quality. The new boat shall replace the old FRB directly without any reconstruction of the mother ships. These elements shall be kept in mind during planning, design and production.

1.3 Document overview

This system specification establishes the requirements and forms the basis for the purchaser's technical verification of the system. All requirements within a section are stated in separate paragraphs with separate headings and numbers for each requirement. Descriptive text is used in some sections to give intentions and explanations applicable to the requirements.

The layout of this document is tailored based on the United States Department of Defence MIL-STD-490 (A), "Specification Practices", and DI-CMAN-80008A, "System Segment Specification (SSS)".

Sections containing TBD (To Be Defined) implies that these sections will be described when more information is available.

Sections containing TBC (To Be Confirmed) implies that the statements / content will be verified or updated information will be included when available.

1.4 Interpretation of requirements and terminology

In this specification a descriptive format is generally used except in the formulation of Requirements and related Verification Requirements and Acceptance Criteria. Textual description is generally stated with basis in what the system looks like, or how it is functionally performing (seen from the Purchaser's point of view) when it is installed onboard.

In this RFQ requirements are containing the word "shall" or the word "should". The interpretation of requirements is also given by assigning a "weight" representing a definition of the importance of the fulfilment of each requirement in the offer, as seen from NDPD. The weight is denominated by using the numbers, 10, 6 and 3 only; in descending importance. The interpretation of each requirement is as follows:

Shall; Weight 10

Requirements containing "shall" are always categorised by "weight 10" and are mandatory to be fully compliant in the offer and fulfilled in the delivered system. The related verification requirement and acceptance criteria will verify this. Any deficiency or deviation from a "shall" requirement is regarded a major nonconformity delivery.

Should; Weight 6

Requirements containing "should" and categorised by "weight 6" are in the RFQ to be regarded primary performance goals, design goals or design guidelines. Prior to contract award all "should" requirements are converted to "shall" requirements where the delivered system fulfils each requirement to the specified extent. The related verification requirement and acceptance criteria will verify this. Any deficiency or deviation from an agreed "shall" requirement is regarded a major nonconformity delivery.

Should; Weight 3

Requirements containing "should" and categorised by "weight 3" are secondary objectives or guidelines. Prior to contract award all "should" requirements are converted to "shall" requirements where the delivered system fulfils each requirement to the specified extent. The related verification requirement and acceptance criteria will verify this. Any deficiency or deviation from an agreed "shall" requirement is regarded a major nonconformity delivery.

The following interpretation of terminology applies:

- Whenever requirements are stated herein to "include" a group of items, parameters, or other considerations, "include" shall be construed to mean: "include but not limited to".
- .../... (two terms separated by a slash) means that both terms apply; it is like a non-exclusively 'or': either one of them, or both of them.
- "At least" means to include/use as a minimum; it may be more, and is thus not limited to the listed content only.
- Whenever reference is made to a section, paragraph or task, the reference shall be construed to include all subordinate and referenced paragraphs unless otherwise stated.
- Where referenced applicable standards, specifications, etc. refer to the "Government", this shall be interpreted to mean "Purchaser".

2 Applicable Documents

2.1 Documents forming parts of this specification

The following documents of the exact issue shown form in their entirety a part of this specification to the extent exclusions or non-applicability to specific parts or paragraphs is specified in this SSS or its annexes. In the event of conflict between the documents referenced herein and the specific requirements of this SSS, the content of the requirements in this SSS are superseding.

IMO MSC.48(66) Life-Saving Appliances Code(LSA)

The Royal Norwegian Navy Standard Requirements and Regulations Part 2 Chapter 2 Section 1 Pre-treatment, Coating and protection against corrosion (valid for aluminium only).

2.2 Documents Referenced to in this Specification

The following documents are referenced in this specification. The documents are of informative character, exhibits guidance, but do not form a part of the requirements in this SSS or its annexes.

NRAR Miscellaneous Notations, January 2008.

NRAR Human System Integration, January 2008.

The Royal Norwegian Navy Standard Requirements and Regulations Part 2 Chapter 3.

3 Requirements

Each requirement in this specification is structured in the following way:

3.13.x.y <Requirement name>

<i>Categorised by:</i>	Weight <10, 6 or 3>
<i>Requirement:</i>	The requirement text; containing ... “shall” or “should” something.
<i>Verification method:</i>	<Test, Demonstration, Analysis, Simulation or Inspection>
<i>Verification level:</i>	<FAT, HAT or SAT>
<i>Verification requirement:</i>	The verification requirement text; supporting information about how the purchaser will verify that the requirement is fulfilled.
<i>Acceptance Criteria:</i>	Text describing the acceptance criteria for fulfilment of the requirement; will contain information / criteria for the purchaser’s acceptance of the requirement, based on the correct performance of the verification requirement.
<i>Contractor Response:</i>	The Bidder shall for each SSS state, by filling out “compliant” or “non compliant”, whether the offered solution complies with the SSS, as well as provide a detailed response to all the SSS. The Bidder shall give reference to a verification document to substantiate that the requirement is met (e.g. Qualification tests, Analysis etc.).

Description of the available Verification Methods:

- Analysis (A sequence of arguments that show compliance between the results and the given expectation(s); - for example, an analytical evaluation of the MTBF for a system leading to the conclusion that the specified requirement(s) are met (or not)).
- Demonstration (Bringing forward proof to support a given conclusion; - for example, using mock-ups, physical models or the real equipment to prove that what happens when a button is pressed, is as pre-described).
- Test (An event or a series of events performed on a system, subsystem, component, integration or interface under test, in order to investigate a parameter or one or more of its characteristics; - for example, by chock testing physical prototypes, or EMC testing of a component, being able to determine the actual value or characteristic of what is being tested).
- Inspection (Investigation or measurement to verify whether a system, subsystem, component, integration, interface or activity is compliant with the requirement(s) or not; for example, inspection of drawings or the physical equipment).
- Simulation (A simplified (physical or conceptual) representation with controllable input, of an actual system, subsystem, component, integration or interface, with given characteristics, that shall show compliance between the results and the given expectation(s); - for example, sonar detection performance under various conditions).

Note that each requirement is only to be verified by one of the methods.

Description of the available Classes of Verification:

FAT:

Factory Acceptance Test is a test of the technical functionality of the physical system. The test is conducted at the contractor's premises and may contain several individual tests.

The tests may have different time slots. The product, which is tested, may be stimulated from the environment by real data or by use of simulated data.

The purpose of the test is to verify that the system or part of the system is developed and produced in accordance with the specifications. The test is to be conducted in accordance with the agreed test procedures. FAT is considered a static test.

HAT:

Harbour Acceptance Test is a test of the technical functionality of the physical system when installed on-board.

The tests are conducted in harbour alongside the pier, and contain several different tests of the integrated / installed system based on stimulated input from other equipment on board or by use of especially dedicated test equipment.

The purpose of the test is, at a minimum, to verify that the functionality from FAT still is valid after integration on-board and to verify that the integrated / installed system is in accordance with the specifications. The test is to be conducted in accordance with the agreed test procedures. HAT is considered a static test.

SAT:

Sea Acceptance Test is a test of the dynamic functionality of the integrated physical system installed on board the ship. The tests are conducted at sea and contain several integrated tests based on real input from the actual environment.

The purpose of the test is to verify that the functionality established by HAT is still valid under real conditions and compliant with the specified performance criteria and the functional specifications. The test is to be conducted in accordance with the agreed test procedures. SAT is considered a dynamic test.

3.1 Functional and performance requirements

3.2 System capability requirements

3.2.1 General

3.2.1.1 Type approval

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The FRB shall be type approved by DnV and shall be wheel marked according to MED (Marine Equipment Directive) no. A.1/1.20, Fast Rescue boats (7 th amendment), except the requirements to low voltage (50 volt) and colour on the FRBs for RNON. Note: All MED-approved products can be found at www.mared.org
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect the DnV type approval- and MED-certificate

Acceptance Criteria: Verify that the certificates show that the boat is in accordance with LSA Code with exemptions as specified.

Contractor Response:

3.2.1.2 Interchange ability

Categorised by: Weight 10

Requirement: The boat shall be able to replace Sea bear MK II without reconstruction of mother ships. The boat shall be possible to use in davits on both sides of the ships.

Verification method: Inspection

Verification level: SAT

Verification requirement: Inspect drawings for each vessel showing that the boat fits in the davit and dock.

Acceptance Criteria: Verify that the boat is in accordance with requirement.

Contractor Response:

3.2.1.3 Environment

Categorised by: Weight 10

Requirement: The Fast Rescue Boat shall be able to operate in following environment:

- Sea temperature: -2 °C to +32°C
- Ambient temperature (outside): -30 °C to +45 °C
- Relative humidity: 20 % - 100 %
- Air salinity: up to 2.5%
- Solar radiation: As met at equator (1360W/m²)
- Dust/soot deposits: 0-3 g/(m² h)
- Salt mist in air: 0,5-1,0 mg/m³
- Sand in air: 0,1 g/m³

Verification method: Analysis, Inspection

Verification level: HAT

Verification requirement: Inspect technical documentation showing that boat is in accordance with requirement

Acceptance Criteria: Verify that the boat is in accordance with requirement

Contractor Response:

3.2.1.4 Noise levels 1

The CG is using the FRB relatively often and some times for long periods each time. Even though there are only specific requirements to noise levels in sea state 0-1, the manufacturer should ensure that noise levels are kept as low as possible, to maintain safety on board regarding communication as well as a reasonable level for personnel health over time.

Categorised by: Weight 10

Requirement: The noise levels in the boat shall not exceed 80 dB in 30 knots in sea state 0-1.

Verification method: Test

Verification level: SAT
Verification requirement: Measure that the noise level is in accordance with requirement.
Acceptance Criteria: Verify the noise level is in accordance with requirement.
Contractor Response:

3.2.1.5 Noise levels 2

The CG is using the FRB relatively often and some times for long periods each time. Even though there are only specific requirements to noise levels in sea state 0-1, the manufacturer should ensure that noise levels are kept as low as possible, to maintain safety on board regarding communication as well as a reasonable level for personnel health over time.

Categorised by: Weight 6
Requirement: The noise levels in the boat should not exceed 77 dB in 30 knots in sea state 0-1.
Verification method: Test
Verification level: SAT
Verification requirement: Measure that the noise level is in accordance with requirement.
Acceptance Criteria: Verify the noise level is in accordance with requirement.
Contractor Response:

3.2.1.6 Noise levels 3

The CG is using the FRB relatively often and some times for long periods each time. Even though there are only specific requirements to noise levels in sea state 0-1, the manufacturer should ensure that noise levels are kept as low as possible, to maintain safety on board regarding communication as well as a reasonable level for personnel health over time.

Categorised by: Weight 6
Requirement: The noise levels in the boat should not exceed 75 dB in 30 knots in sea state 0-1.
Verification method: Test
Verification level: SAT
Verification requirement: Measure that the noise level is in accordance with requirement.
Acceptance Criteria: Verify the noise level is in accordance with requirement.
Contractor Response:

3.2.2 Main dimensions and capacities

3.2.2.1 Dimensions

The davit and stowage facilities of the FRBs are fitted for the current standard Norwegian Fast Rescue Boat, Sea Bear 25 MK II, and the new FRBs shall not exceed these dimensions.

Categorised by: Weight 10
Requirement: The boat shall not exceed the following main dimensions:
Maximum load: 3600 kg (inclusive 8 persons)

	Overall length: 7,8 metres
	Breadth extreme: 2,9 metres
	Total height: 2,45 metres
<i>Verification method:</i>	Inspection, Test
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect technical documentation showing dimensions. Perform test that shows that the boat does not exceed 3600 kg fully equipped/loaded.
<i>Acceptance Criteria:</i>	Verify that the boat is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.2.2 Speed 1

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	<i>The boat shall be capable of reaching a speed of 35 knots, with a total weight of 3600 kg, in calm waters.(Sea state, SS0 - low SS3, with a significant wave height of, Hs = 0 - 0,5m)</i>
<i>Verification method:</i>	Test
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Test that the boat is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the boat is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.2.3 Speed 2

<i>Categorised by:</i>	Weight 6
<i>Requirement:</i>	<i>The boat should be capable of reaching a speed of 38 knots, with a total weight of 3600 kg, in calm waters.(Sea state, SS0 - low SS3, with a significant wave height of, Hs = 0 - 0,5m)</i>
<i>Verification method:</i>	Test
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Test that the boat is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the boat is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.2.4 Watertight integrity (NA)

3.2.3 Hull

3.2.3.1 Hull Materials (New text)

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be built in materials that secures that the boat is sufficient reinforced to withstand hard impacts and especially beaching of the boat on a rocky beach.

Note: Beaching is necessary in the northern parts of Norway and also at the Hopen, Bear Island, Jan Mayen and the Svalbard islands, where quays are not available. The beaches often consist of rubble stones, but other stones can also occur. The beaching will happen in low speed and in as calm water as possible, however swell may occur.

<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect DnV type approval certificate of the boat hull and equipment. Inspect the description of building methods, described by the manufacturer.
<i>Acceptance Criteria:</i>	Verify that the hull is DnV approved and that the description of the building method is described in a way that ensures that the boat is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.3.2 Hull Frame Materials

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The hull shall have a powerful frame and a suitable design to achieve the requirements for seaworthiness, speed and capacity.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect DnV type approval certificate, the boat hull and equipment.
<i>Acceptance Criteria:</i>	Verify that the boat is in accordance with requirement
<i>Contractor Response:</i>	

3.2.3.3 Pressure testing of hull tanks (NA)

3.2.3.4 Watertight compartments

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	All watertight compartments in the boat shall be easy accessible and equipped with drainage possibilities.
<i>Verification method:</i>	Inspection, Test
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that technical inspection shows watertight integrity of the boat and easy accessible drainage points
<i>Acceptance Criteria:</i>	Verify that the boat is in accordance with requirement
<i>Contractor Response:</i>	

3.2.3.5 Hull Materials (New requirement)

<i>Categorised by:</i>	Weight 10
------------------------	-----------

Requirement: The hull shall be made of a material which does not soak water in case of hull damage and that minor damages is easy to repair in stowage position on board mother vessel. If the boat is built in aluminium, marine corrosion resistant aluminium shall be used.

Note: Polyester is not accepted

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect documentation showing that the boat is in accordance with requirement.

Acceptance Criteria: Verify that the boat is in accordance with requirement

Contractor Response:

3.2.4 Fender and protection systems

3.2.4.1 Fender type

Categorised by: Weight 10

Requirement: The fender system shall be of a type which does not soak water.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing that the fender system is in accordance with requirement.

Acceptance Criteria: Verify that the fender system is in accordance with requirement.

Contractor Response:

3.2.4.2 Fender covering

Categorised by: Weight 10

Requirement: The fender shall be covered by a durable material with low friction which is easy to replace or repair.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing that the fender system is in accordance with requirement.

Acceptance Criteria: Verify that the fender system is in accordance with requirement.

Contractor Response:

3.2.4.3 Fender protection

Categorised by: Weight 10

Requirement: The fender system shall be protected with a removable net.

Verification method: Inspection

Verification level: SAT

Verification requirement: Inspect technical documentation showing that the fender system is in accordance with requirement.

Acceptance Criteria: Verify that the fender system is in accordance with requirement.
Contractor Response:

3.2.4.4 Bow keel protection (New text)

Categorised by: Weight 10
Requirement: The bow shall be protected with a replaceable protection in order to land personnel against a rock or similar, without damaging the bow. The keel shall also be protected with easy replaceable protection.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect technical documentation showing that the bow and keel protection is in accordance with requirement.
Acceptance Criteria: Verify that bow keel protection is in accordance with requirement.
Contractor Response:

3.2.4.5 Water jet protection and divers platform

Categorised by: Weight 10
Requirement: To protect the water jet, a platform that also can be suitable for use as a diver's platform, shall be integrated.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect technical documentation showing that the platform is in accordance with requirement.
Acceptance Criteria: Verify that the platform is in accordance with requirement.
Contractor Response:

3.2.4.6 Water jet protection platform rubber

Categorised by: Weight 10
Requirement: The platform edges shall be protected with replaceable soft protection to avoid damaging.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect technical documentation showing that the platform is in accordance with requirement.
Acceptance Criteria: Verify that the platform is in accordance with requirement.
Contractor Response:

3.2.5 Lifting arrangement

3.2.5.1 Lifting hook and painter line I

Categorised by: Weight 10

<i>Requirement:</i>	In the existing FRBs, Sea Bear MKII, Henriksen Hooks are used. To standardize, the same manufacturer shall be used in the fast rescue boat delivered.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect technical documentation showing the engine and water jet models
<i>Acceptance Criteria:</i>	Verify that lifting hook is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.5.2 Lifting hook and painter line II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The Fast Rescue Boat shall be equipped a non-electrical system allowing remote release of the lifting hook, from the Helmsman's position.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect documentation and demonstrate that the system is in accordance with requirement when lowering the boat into the sea.
<i>Acceptance Criteria:</i>	Verify that the lifting hook and painter line are in accordance with requirement
<i>Contractor Response:</i>	

3.2.5.3 Lifting hook, hinged connection

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The Fast Rescue Boat shall be equipped with a hinged connection between the hook and the lifting frame on the boat, allowing the hook to pivot 30° (to each side).
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect documentation and demonstrate that the system is in accordance with requirement by hoisting the boat into the docking station.
<i>Acceptance Criteria:</i>	Verify that the lifting hook and painter line are in accordance with requirement
<i>Contractor Response:</i>	

3.2.5.4 Lifting frame attachment

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Lifting frame shall be attached to the boat with bolts and be easy to remove.
<i>Verification method:</i>	Inspection, demonstration.
<i>Verification level:</i>	FAT

Verification requirement: Inspect boat and drawings showing the lifting frame interface
Acceptance Criteria: Verify that the lifting frame is in accordance with requirement
Contractor Response:

3.2.5.5 Lifting frame

Categorised by: Weight 10
Requirement: The lifting frame and the interface in the boat shall have an SWL of five tons and be designed for 10000 lifting operations during lifetime.

Verification method: Analysis
Verification level: FAT
Verification requirement: An analysis showing that the lifting frame and the interface in the boat are in accordance with requirement is presented.
Acceptance Criteria: Verify that the lifting frame and the interface in the boat are in accordance with requirement.

Contractor Response:

3.2.5.6 Relief point I

Categorised by: Weight 10
Requirement: The lifting frame shall be equipped with a relief point(s), (lifting lug), to be used for the securing wire/chain we use when the boat is hanged temporarily in deck position.

Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect drawings showing the relief point(s) on the lifting frame.
Acceptance Criteria: Verify that the relief point(s) are in accordance with requirement.

Contractor Response:

3.2.5.7 Relief point II

Categorised by: Weight 10
Requirement: The Lifting frame relief point(s) shall be possible to use in davits on both sides of the mother ship.

Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect drawings showing the lifting frame relief point(s) on the lifting frame.
Acceptance Criteria: Verify that the relief point(s) are in accordance with requirement.

Contractor Response:

3.2.6 Propulsion

3.2.6.1 Engine

Categorised by: Weight 6

Requirement: In the existing FRBs, Sea Bear MKII, Yanmar engine are used. In addition a number of Cummins engines are in use on our vessels. To standardize, the same manufacturers should be used in the fast rescue boat delivered.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing the engine and water jet models

Acceptance Criteria: Verify that engine and water jet are in accordance with requirement.

Contractor Response:

3.2.6.2 Water jet I

Categorised by: Weight 10

Requirement: The FRB shall be equipped with water jet

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing that the water jet is in accordance with requirement.

Acceptance Criteria: Verify that the FRB is equipped with a water jet.

Contractor Response:

3.2.6.3 Water jet II

Categorised by: Weight 10

Requirement: Water jet shall be possible to disengage/engage.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect technical documentation and demonstrate that the water jet is in accordance with requirement.

Acceptance Criteria: Verify that the water jet is in accordance with requirement

Contractor Response:

3.2.6.4 Water jet III

Categorised by: Weight 6

Requirement: In the existing FRBs, Sea Bear MKII, Hamilton water jet is used. To standardize, the same manufacturers should be used in the fast rescue boat delivered.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing the engine and water jet models

Acceptance Criteria: Verify that engine and water jet are in accordance with requirement.

Contractor Response:

3.2.6.5 Water jet IV

<i>Categorised by:</i>	Weight 6
<i>Requirement:</i>	Water jet should be possible to reverse to clean the system.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect technical documentation and demonstrate that the water jet is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the water jet is in accordance with requirement
<i>Contractor Response:</i>	

3.2.6.6 Protection and cleaning of water jet

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The water jet shall have a screen rake to protect the impeller from seaweed/debris and make it possible to clean the system.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect the technical documentation and demonstrate that the screen rake and inspection hatch are in accordance with requirement
<i>Acceptance Criteria:</i>	Verify that the screen rake and inspection hatch are in accordance with requirement
<i>Contractor Response:</i>	

3.2.6.7 Inspection hatch for the water jet I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	There shall be an inspection hatch for the water jet, extended above the waterline, so inspection can be made while at sea.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect the technical documentation and demonstrate that the screen rake and inspection hatch are in accordance with requirement
<i>Acceptance Criteria:</i>	Verify that the screen rake and inspection hatch are in accordance with requirement
<i>Contractor Response:</i>	

3.2.6.8 Inspection hatch for the water jet II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The inspection hatch shall be possible to remove without using any tools.
<i>Verification level:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT

Verification requirement: Inspect the technical documentation and demonstrate that the screen rake and inspection hatch are in accordance with requirement

Acceptance Criteria: Verify that the screen rake and inspection hatch are in accordance with requirement

Contractor Response:

3.2.6.9 Steering system and water jet

Categorised by: Weight 10

Requirement: The steering and water jet system shall be based on a hydraulic system and be easy and accurate to operate.

Verification method: Demonstration

Verification level: SAT

Verification requirement: Demonstrate that steering and water jet system is in accordance with requirement.

Acceptance Criteria: Verify that steering and water jet system is in accordance with requirement.

Contractor Response:

3.2.6.10 Steering wheel ball

Categorised by: Weight 10

Requirement: A steering wheel ball shall be mounted on the steering wheel, to ensure fast manoeuvring.

Verification method: Inspection

Verification level: SAT

Verification requirement: Inspect that a steering wheel ball is mounted on the steering wheel.

Acceptance Criteria: Verify that a steering wheel ball in accordance with requirement is delivered

Contractor Response:

3.2.6.11 Fuel

Categorised by: Weight 10

Requirement: The engine shall be able to run on marine gas oil (MGO), NATO F-75 and NATO F-76 diesel fuel.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing that the engine is in accordance with requirement.

Acceptance Criteria: Verify that the engine is in accordance with requirement.

Contractor Response:

3.2.6.12 Seawater intake strainer

Categorised by: Weight 10

Requirement: A sea water intake strainer, approved by the engine manufacturer, shall be mounted so that it is possible to clean the strainer while the boat is at sea.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect the technical documentation, inspect the statement from the engine manufacturer, and demonstrate that the seawater intake strainer is in accordance with requirement.

Acceptance Criteria: Verify that the seawater intake strainers in accordance with requirement

Contractor Response:

3.2.6.13 Cover for the seawater intake strainer

Categorised by: Weight 10

Requirement: The seawater intake strainer shall be equipped with a transparent watertight cover and be easy to remove without using tools.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect the technical documentation, inspect the statement from the engine manufacturer, and demonstrate that the seawater intake strainer is in accordance with requirement.

Acceptance Criteria: Verify that the seawater intake strainers in accordance with requirement

Contractor Response:

3.2.6.14 Access in machinery space

Categorised by: Weight 10

Requirement: Easy access to machinery space in general and to frequent check points especially, shall be possible in order to maintain vital components of the propulsion system.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect the technical documentation showing the machinery space access. Demonstrate that frequent checkpoints as filters, dipsticks e.g. are possible to maintain, in accordance with requirement.

Acceptance Criteria: Verify that the access in machinery space in accordance with requirement

Contractor Response:

3.2.6.15 Machinery space cover

Categorised by: Weight 10

Requirement: Machinery space cover shall be secured with a robust locking device securing easy access and sufficient protection of components in the machinery space, opening and closing

facilities into the engine compartment to be designed with special attention to functionality in cold and icy weather.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect the technical documentation and perform a water spray demonstration that shows that the machinery space cover is in accordance with requirement.

Acceptance Criteria: Verify that the machinery space cover is in accordance with requirement.

Contractor Response:

3.2.6.16 Pump for engine oil change

Categorised by: Weight 10

Requirement: An easy accessible and rigid mounted oil suction pump shall be installed in the machinery space to make engine oil change easy.

Verification method: Demonstration

Verification level: FAT

Verification requirement: Demonstration shows that an easy accessible pump is installed in the machinery space and that it's easy to change engine oil.

Acceptance Criteria: Verify that the pump for engine oil change is in accordance with requirement.

Contractor Response:

3.2.6.17 Exhaust system, freezing

Categorised by: Weight 10

Requirement: The exhaust system shall be arranged in a way that cold conditions will not lead to freezing and blocking of the exhaust outlet.

Verification method: Analysis

Verification level: FAT

Verification requirement: Present analysis showing that the exhaust system design is in accordance with requirement

Acceptance Criteria: Verify that the exhaust system design is in accordance with requirement

Contractor Response:

3.2.6.18 Exhaust system, outlet

Categorised by: Weight 10

Requirement: The exhaust pipelines shall have a system preventing backflow of seawater due to for instance emergency stop

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspect design drawings and perform a demonstration showing that the exhaust system design is in accordance with requirement

Acceptance Criteria: Verify that the exhaust system design is in accordance with requirement

Contractor Response:

3.2.6.19 Engine heater

Categorised by: Weight 10

Requirement: An engine electrical heater with sufficient capacity in cold weather, as described in 3.2.1.3 Environment, shall be installed in the engine cooling system.

Verification method: Analysis

Verification level: FAT

Verification requirement: Perform analysis showing that the engine heater is in accordance with requirement

Acceptance Criteria: Verify that the engine heater is in accordance with requirement

Contractor Response:

3.2.6.20 Engine heater type

Categorised by: Weight 10

Requirement: The engine heater shall be of a hose- or pipe-mounted type with a circulation pump and be easy accessible for replacement.

Verification method: Analysis

Verification level: FAT

Verification requirement: Perform analysis showing that the engine heater is in accordance with requirement

Acceptance Criteria: Verify that the engine heater is in accordance with requirement

Contractor Response:

3.2.7 Deck space

3.2.7.1 Deck storage

Categorised by: Weight 10

Requirement: The boat shall be equipped with an integrated track system for securing divers equipment and other equipment on the foredeck.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect technical documentation showing that the means for securing equipment is in accordance with requirement.

Acceptance Criteria: Verify that the means for securing equipment is in accordance with requirement.

Contractor Response:

3.2.7.2 Bow boarding platform I

Categorised by: Weight 10

<i>Requirement:</i>	The bow shall be designed in order for inspectors to be able to board a ship.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Demonstration shows that the bow boarding platform is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the bow boarding platform is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.7.3 Bow boarding platform II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The bow platform design shall ensure that the inspectors are able to stand up and hold on to a hand rail, while waiting for a possibility to enter the pilot ladder on the ship.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Demonstration shows that the bow boarding platform is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the bow boarding platform is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.7.4 Rescue frame

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be equipped with a rescue frame, Dacon RG10, which is possible to attach on each side of the boat.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect the documentation of the rescue frame and demonstrate that the rescue frame is possible to attach on each side of the boat.
<i>Acceptance Criteria:</i>	Verify that the rescue frame is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.8 Electrical power system

3.2.8.1 General information

Mother's ship power supply is 230V/60Hz, not 50 volt as described in LSA Code.

The electrical installation will be based on high quality and accepted for maritime installations in general. Exposed equipment should aim to be watertight. Equipment where it is necessary to have easy access for maintenance or fault finding purposes shall be placed in accordance to this.

3.2.8.2 Electrical installations

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Electrical installations shall as a minimum have IP56 enclosure (in accordance with IEC-publication no. 144).
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the electrical installations are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the electrical installations are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.8.3 Power supply

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	All power supply necessary from the mother ship shall be arranged in one single connection with capacity for engine heater/fans, battery chargers and anti-icing system to be connected at the same time.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect that the power supply connection is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that power supply connection is in accordance with requirement
<i>Contractor Response:</i>	

3.2.8.4 Power supply connections I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The power supply connection's position shall not obstruct the crew and be protected from damage for the lifting system.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect that the power supply connection is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that power supply connection is in accordance with requirement
<i>Contractor Response:</i>	

3.2.8.5 Power supply connections II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The power supply connection shall be as centred as possible in the boat to secure access from both sides of the boat and avoid danger of falling.
<i>Verification method:</i>	Inspection

Verification level: HAT
Verification requirement: Inspect that the power supply connection is in accordance with requirement.
Acceptance Criteria: Verify that power supply connection is in accordance with requirement
Contractor Response:

3.2.8.6 Dynamo

Categorised by: Weight 10
Requirement: The dynamo shall have an integrated electronic regulator with capacity to charge the batteries even if all equipment on board is running at the same time. This is to ensure that the batteries are not discharged under operations.
Verification method: Analysis
Verification level: FAT
Verification requirement: Analysis shows that the dynamo is in accordance with requirement.
Acceptance Criteria: Verify that the dynamo is in accordance with requirement.
Contractor Response:

3.2.8.7 Batteries I

Categorised by: Weight 10
Requirement: As the GPS Plotter/sounder and the radio are started up prior to launching of the boat, a reliable and stable power supply to these components shall be secured, even when the engine is started.
Verification method: Documentation
Verification level: FAT
Verification requirement: Documentation which show that the GPS Plotter/sounder and the radio power supply are in accordance with requirement.
Acceptance Criteria: Verify that the GPS Plotter/sounder and the radio power supply are in accordance with requirement.
Contractor Response:

3.2.8.8 Batteries II

Categorised by: Weight 6
Requirement: Batteries used in the FRB, should be of gel filled type.
Verification method: Documentation
Verification level: FAT
Verification requirement: Documentation which show that the batteries are in accordance with requirement.
Acceptance Criteria: Verify that the batteries are in accordance with requirement.
Contractor Response:

3.2.8.9 Electrical Connections I

Categorised by:	Weight 10
Requirement:	All electrical connections shall be made of fixed contacts arranged in a way so the engine and other electrical equipment can be removed without leaving any loose cables.
Verification method:	Inspection
Verification level:	FAT
Verification requirement:	Inspect technical documentation showing that the electrical cable connections are in accordance with requirement.
Acceptance Criteria:	Verify that electrical cable connections are in accordance with requirement.
Contractor Response:	

3.2.8.10 Electrical Connections II

Categorised by:	Weight 10
Requirement:	All electrical connections shall be arranged easy accessible and in a way so they can not be mixed or mistaken.
Verification method:	Inspection
Verification level:	FAT
Verification requirement:	Inspect technical documentation showing that the electrical cable connections are in accordance with requirement.
Acceptance Criteria:	Verify that electrical cable connections are in accordance with requirement.
Contractor Response:	

3.2.8.11 Fans I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	In the machinery space electrical thermostat operated fans shall be installed.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect that the fans are installed, and demonstrate that the functionality of the fans are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the fans are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.8.12 Fans II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The electrical thermostat operated fans shall have sufficient capacity to keep the machinery space and cockpit free of ice while connected to the mother ship's power supply (Environment as described in 3.2.1.3 Environment).
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	HAT

Verification requirement: Inspect that the fans are installed, and demonstrate that the functionality of the fans are in accordance with requirement.
Acceptance Criteria: Verify that the fans are in accordance with requirement.
Contractor Response:

3.2.8.13 Searchlights

Categorised by: Weight 10
Requirement: All searchlights shall be in accordance with the LSA-code.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect the Statement of Conformity to LSA-code.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.14 Handheld searchlights

Categorised by: Weight 10
Requirement: The boat shall be equipped with two handheld searchlights.
Verification method: Inspection, Demonstration
Verification level: HAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.15 12V sockets and brackets for searchlights

Categorised by: Weight 10
Requirement: The boat shall be equipped with 12V sockets and brackets for handheld searchlight near the bow and on both sides of the cockpit.
Verification method: Inspection, Demonstration
Verification level: HAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.16 Locations of brackets for Searchlights

Categorised by: Weight 10
Requirement: Locations of the brackets shall secure maximum effect of the searchlights, good working position for the searchlight operator.
Verification method: Inspection, Demonstration
Verification level: HAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.

Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.17 Storing of searchlights

Categorised by: Weight 10
Requirement: When the searchlights are not in use it shall be stored on separate brackets ensuring that searchlights are well protected and the boat crews are not obstructed.
Verification method: Inspection, Demonstration
Verification level: HAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.18 Bow searchlights

Categorised by: Weight 10
Requirement: Two searchlights, in accordance with the LSA-code, shall be integrated in the bow boarding platform.
Verification method: Inspection, Demonstration
Verification level: FAT
Verification requirement: Inspect the Statement of Conformity to LSA-code and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.19 Protection of bow searchlights

Categorised by: Weight 10
Requirement: The bow searchlights shall be protected by transparent protection and be operated by a separate switch.
Verification method: Inspection, Demonstration
Verification level: FAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.20 Working lights

Categorised by: Weight 10
Requirement: Two working lights shall be mounted on the self-righting rack and be able to lighten up the deck, the water along side the boat on both sides and be operated by a separate switch.
Verification method: Inspection, Demonstration

Verification level: FAT
Verification requirement: Inspect and demonstrate that the searchlights are in accordance with requirement.
Acceptance Criteria: Verify that the searchlights are in accordance with requirement.
Contractor Response:

3.2.8.21 Internal lights

Categorised by: Weight 10
Requirement: The boat shall be equipped with fixed lighting inside watertight stowage room and in the machinery space, securing good working light in the engine and gear area.
Verification method: Demonstration
Verification level: HAT
Verification requirement: Demonstration shows that the lights are in accordance with requirement.
Acceptance Criteria: Verify that the lights are in accordance with requirement.
Contractor Response:

3.2.8.22 Bilge pump I

Categorised by: Weight 10
Requirement: The boat shall be equipped with an electrical bilge pump.
Verification method: Demonstration
Verification level: SAT
Verification requirement: Demonstrate that the bilge pump and operator switch is in accordance with requirement
Acceptance Criteria: Verify that the bilge pump is in accordance with requirement.
Contractor Response:

3.2.8.23 Bilge pump II

Categorised by: Weight 10
Requirement: The bilge pump shall be operated from the helmsman's position by a push button which returns to stop when released.
Verification method: Demonstration
Verification level: SAT
Verification requirement: Demonstrate that the bilge pump and operator switch is in accordance with requirement
Acceptance Criteria: Verify that the bilge pump is in accordance with requirement.
Contractor Response:

3.2.8.24 Main power control switch I

Categorised by: Weight 10
Requirement: The boat shall be equipped with main power control switch (es) for all consumers on board which are in use when operating the boat.

Verification method: Inspection, Test
Verification level: FAT
Verification requirement: Inspect that the main power control switch for consumers is installed and test that all consumers' power are cut off when the switch is turned off. Inspect that the location is in accordance with requirement.
Acceptance Criteria: Verify that the power control switch is in accordance with requirement.
Contractor Response:

3.2.8.25 Main power control switch II

Categorised by: Weight 10
Requirement: The main power control switch (es) shall be as centred as possible in the boat to secure access from both sides of the boat and avoid danger of falling.
Verification method: Inspection, Test
Verification level: FAT
Verification requirement: Inspect that the main power control switch for consumers is installed and test that all consumers' power are cut off when the switch is turned off. Inspect that the location is in accordance with requirement.
Acceptance Criteria: Verify that the power control switch is in accordance with requirement.
Contractor Response:

3.2.8.26 Anti-icing system I

Categorised by: Weight 10
Requirement: The boat shall be equipped with an anti-icing system based on self-regulating heating-cables 230V AC under deck plates.
Verification method: Inspection, Analysis
Verification level: FAT
Verification requirement: Inspect that the heating cables and installation is in accordance with requirement and present analysis showing that the capacity of the cables are in accordance with environmental requirements.
Acceptance Criteria: Verify that the anti-icing system is in accordance with requirement.
Contractor Response:

3.2.8.27 Anti-icing system II

Categorised by: Weight 10
Requirement: The heating-cables shall have sufficient capacity in cold weather, as described in 3.2.1.3 Environment, to keep the boat free of ice.
Verification method: Inspection, Analysis

Verification level: FAT
Verification requirement: Inspect that the heating cables and installation is in accordance with requirement and present analysis showing that the capacity of the cables are in accordance with environmental requirements.
Acceptance Criteria: Verify that the anti-icing system is in accordance with requirement.
Contractor Response:

3.2.8.28 Anti-icing system III

Categorised by: Weight 10
Requirement: The heating cables shall be possible to replace without any cutting in the deck.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect that the heating cables and installation is in accordance with requirement.
Acceptance Criteria: Verify that the anti-icing system is in accordance with requirement.
Contractor Response:

3.2.9 Communication and navigation

Because NDLO have to program the channels in our radios and have the responsibility for all maintenance on communications systems, NDLO want a radio system where the workshops already have the necessary equipment and skill to do the required tasks.
CG and RNON already have a number of Gecko helmets in use. These helmets have the possibility for integrated communication.

3.2.9.1 VHF radio I

Categorised by: Weight 10
Requirement: The boat shall be equipped with a maritime VHF according to IMO res A.803.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect that the radio system is in accordance with requirement.
Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.2 VHF radio II

Categorised by: Weight 10
Requirement: The minimum 25W VHF radio set shall be fixt mounted and protected from water and condense on the display.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect that the radio system is in accordance with requirement.

Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.3 VHF radio III

Categorised by: Weight 10
Requirement: The VHF radio shall be possible to operate from both helmsman and navigator position.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect that the radio system is in accordance with requirement.
Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.4 VHF radio IV

Categorised by: Weight 10
Requirement: The maritime VHF shall be able to operate all maritime VHF-channels included L-, F- and P-channels.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect that the radio system is in accordance with requirement.
Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.5 VHF radio V

Categorised by: Weight 10
Requirement: The maritime VHF shall have DSC.
Verification method: Inspection
Verification level: HAT
Verification requirement: Inspect that the radio system is in accordance with requirement.
Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.6 Helmsman's helmets I

Categorised by: Weight 10
Requirement: The existing helmsman's helmet, with integrated communication shall be possible to connect to the delivered VHF radio system by a separate plug.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect that the radio system is in accordance with requirement.
Acceptance Criteria: Verify that the radio system is in accordance with requirement.
Contractor Response:

3.2.9.7 Helmsman's helmets II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The PTT (Push to Talk) key shall be integrated in- or close to lever.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the radio system is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the radio system is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.8 AIS I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be equipped with AIS, type B.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Demonstrate that the AIS are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the AIS are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.9 AIS II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The AIS shall have the possibility to disable transmission independent of the main power switch, ref. 3.2.8.24, to secure that unattended transmission is avoided.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Demonstrate that the AIS are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the AIS are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.10 Electronic Chart System (ECS) / GPS Plotter / sounder I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be equipped with an Electronic chart system (ECS).
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspection and demonstration shows that the the boat is equipped with an ECR
<i>Acceptance Criteria:</i>	Verify shows that the ECR is in accordance with requirement
<i>Contractor Response:</i>	

3.2.9.11 Electronic Chart System (ECS) / GPS Plotter / sounder II

<i>Categorised by:</i>	Weight 10
------------------------	-----------

Requirement: The ECS shall be able to read and present raster charts and Electronic Navigational Charts in the S-57 and S-63.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspection and demonstration shows that the ECR is in accordance with requirement

Acceptance Criteria: Verify shows that the ECR is in accordance with requirement

Contractor Response:

3.2.9.12 Electronic Chart System (ECS) / GPS Plotter / sounder III

Categorised by: Weight 10

Requirement: The boat shall be equipped with a GPS Plotter/sounder with a display of minimum 12 inches.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspection and demonstration shows that the GPS Plotter/sounder is in accordance with requirement

Acceptance Criteria: Verify shows that the GPS Plotter/sounder is in accordance with requirement

Contractor Response:

3.2.9.13 Electronic Chart System (ECS) / GPS Plotter / sounder IV

Categorised by: Weight 10

Requirement: The display shall have a day- and night mode.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspection and demonstration shows that the GPS Plotter/sounder is in accordance with requirement

Acceptance Criteria: Verify shows that the GPS Plotter/sounder is in accordance with requirement

Contractor Response:

3.2.9.14 Electronic Chart System (ECS) / GPS Plotter / sounder V

Categorised by: Weight 10

Requirement: The AIS information shall be presented in the display.

Verification method: Inspection, Demonstration

Verification level: SAT

Verification requirement: Inspection and demonstration shows that the GPS Plotter/sounder is in accordance with requirement

Acceptance Criteria: Verify shows that the GPS Plotter/sounder is in accordance with requirement

Contractor Response:

3.2.9.15 Survival craft radar transponder (SART)

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be equipped with a manual operated TRON SART, replacing the radar reflector required by the LSA code 4.1.5.1.14.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect that the SART is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the SART is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.16 Navigation lights I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Navigation lights according to international rules and regulations shall be fitted.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect and demonstrate that the navigation lights are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the navigation lights are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.17 Navigation lights II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The lanterns shall not be of LED type.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect and demonstrate that the navigation lights are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the navigation lights are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.9.18 Navigation lights III

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The lantern positions shielding shall ensure that the crew's night vision is unaffected.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	SAT
<i>Verification requirement:</i>	Inspect and demonstrate that the navigation lights are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the navigation lights are in accordance with requirement.

Contractor Response:

3.2.9.19 Blue light

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	FRBs delivered to the Coastguard shall be equipped with siren and flashing blue light(s) of strobe type, with good visibility, for police missions.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Demonstrate that the blue lights are in accordance with the requirements.
<i>Acceptance Criteria:</i>	Verify that the blue lights are in accordance with the requirements.

Contractor Response:

3.2.10 Painting (new text)

This specification is based on NRAR Part 2, Ch. 2 Sec 1: Pre-treatment, Coating and Protection against Corrosion on aluminium. If other materials are used, the yard can propose alternative painting, but shall only be used upon approval by NDLO.

3.2.10.1 General Requirements

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Pre-treatment, coating and protection against corrosion shall be in accordance with the following general items in NRAR: A-101, A-102, A-106, A-107, A-108, A-110 and A-111. The yard can propose alternative painting, but shall only be used upon approval by NDLO.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the Pre-treatment, coating and protection against corrosion procedure is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the Pre-treatment, coating and protection against corrosion procedure is in accordance with requirement.

Contractor Response:

3.2.10.2 Pre-treatment

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Pre-treatment shall be in accordance with the following: B-301, B-302, B-303, B-304, B-305, B-306 and B-307. The yard can propose alternative pre-treatment, but shall only be used upon approval by NDLO.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the pre-treatment procedure is in accordance with requirement.

Acceptance Criteria: Verify that the pre-treatment procedure is in accordance with requirement.

Contractor Response:

3.2.10.3 Application methods

Categorised by: Weight 10

Requirement: Application methods shall be in accordance with the following: C-101, C-102, C-103 and C-104.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect that the application procedure is in accordance with requirement.

Acceptance Criteria: Verify that the application procedure is in accordance with requirement.

Contractor Response:

3.2.10.4 Coating

Categorised by: Weight 10

Requirement: Coating shall be in accordance with the following: D-101, D-102, D-103, D-104, D-105, D-106, D-107, D-108, D-109 and D-110

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect that the coating procedure is in accordance with requirement.

Acceptance Criteria: Verify that the coating procedure is in accordance with requirement.

Contractor Response:

3.2.10.5 Painting Schemes

Categorised by: Weight 10

Requirement: The painting schemes shall be as follows:
1x 50 microns DFT Pure epoxy, red colour
1x150 microns DFT High solid Modified epoxy
1x 70 microns DFT High solid Polyurethane

For Coast Guard:

Hull shall be of orange colour, RAL 2009.

Self-righting frame and details around the cockpit shall be of blue colour, RAL 5002

For the Navy:

Hull shall be of grey colour, RAL 7040

Self-righting frame and details around the cockpit shall be black

	On deck areas, including bow boarding platform, anti –skid powder to be added.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the painting schemes are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the painting schemes are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.10.6 Marking

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The boat shall be clearly marked, in accordance with Coast guard and Navy standard. The marking shall be developed in close co-operation with NDLO.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the marking is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the marking is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.11 Self-righting system

3.2.11.1 CO2 bottle

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	CO2 bottle for the self-righting system shall be made of composite. All other parts shall be of non-corrosive material.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect documentation and installation showing that the self-righting system is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the self-righting system is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.11.2 Self-righting rack

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	All brackets, antennas and other equipment in the rack shall be mounted without sharp edges and not obstruct the self-righting bag when inflated.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	A demonstration is performed showing that no equipment obstructs the bag when inflated. The demonstration is documented by video.

Acceptance Criteria: Verify that the self-righting bag is in accordance with requirement

Contractor Response:

3.2.11.3 Protection of the self-righting rack

Categorised by: Weight 10

Requirement: The self-righting rack design, including all mounted equipment, shall reduce the possibility for- and secure protection against hard impacts. Therefore the FRB shall be possible to heel against the ship's side with an angle of 30 degrees, without any conflict with the self-righting rack, while hoisted.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspection shows that the self-righting rack is in accordance with requirement.

Acceptance Criteria: Verify that the self-righting rack is in accordance with requirement.

Contractor Response:

3.2.12 Cockpit and seating arrangement

3.2.12.1 Seats I

Categorised by: Weight 10

Requirement: The boat shall be equipped with six seats behind the cockpit aft in the boat.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect the seats and documented references from similar crafts and technical documentation and capability of the seats.

Acceptance Criteria: Verify that the seats are in accordance with requirement.

Contractor Response:

3.2.12.2 Seats I

Categorised by: Weight 10

Requirement: All seating positions shall be equipped with shock absorbers with proven capability (shall not bottom due to relevant G forces when operating) for this type of craft.

Verification method: Inspection

Verification level: FAT

Verification requirement: Inspect the seats and documented references from similar crafts and technical documentation and capability of the seats. The seats shall have documented damping of peak vertical accelerations. The seats shall have documented damping effect on the forces working on the body.

Acceptance Criteria: Verify that the seats are in accordance with requirement

Contractor Response:

3.2.12.3 Seating II

Categorised by: Weight 10
Requirement: All seats shall be equipped with a back rest, giving support both in sitting and standing position.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect that the seats are in accordance with requirement.
Acceptance Criteria: Verify that the seats are in accordance with requirement.
Contractor Response:

3.2.12.4 Cockpit seating I

Categorised by: **Weight 10**
Requirement: The boat shall be equipped with a seating position for a navigator on the left side of the helmsman's position.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the cockpit seating is in accordance with requirement.
Acceptance Criteria: Verify that the cockpit seating is in accordance with requirement.
Contractor Response:

3.2.12.5 Cockpit seating II

Categorised by: Weight 10
Requirement: Both the navigator and the helmsman shall have a good view to the GPS Plotter/sounder display.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the cockpit seating is in accordance with requirement.
Acceptance Criteria: Verify that the cockpit seating is in accordance with requirement.
Contractor Response:

3.2.12.6 Cockpit windshield I

Categorised by: Weight 10
Requirement: The cockpit shall be arranged with a transparent windshield, protecting the helmsman and crew while seating.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the windshield is in accordance with requirement.

Acceptance Criteria: Verify that the windshield is in accordance with requirement.
Contractor Response:

3.2.12.7 Cockpit windshield II

Categorised by: Weight 10
Requirement: The helmsman shall be able to look over the cockpit windshield while standing.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the windshield is in accordance with requirement.
Acceptance Criteria: Verify that the windshield is in accordance with requirement.
Contractor Response:

3.2.12.8 Cockpit windshield III

Categorised by: Weight 10
Requirement: The cockpit windshield shall be protected with pipes towards the hook and at the same time be suitable as handrails.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the windshield is in accordance with requirement.
Acceptance Criteria: Verify that the windshield is in accordance with requirement.
Contractor Response:

3.2.12.9 Cockpit windshield IV

Categorised by: Weight 10
Requirement: The cockpit windshield shall be angled at the top to deflect the wind upwards.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the boat and technical documentation showing that the windshield is in accordance with requirement.
Acceptance Criteria: Verify that the windshield is in accordance with requirement.
Contractor Response:

3.2.12.10 Cockpit panel I

Categorised by: Weight 10
Requirement: The cockpit panel shall be equipped with indicators showing the most important pressures, temperatures and an audible and visible alarm for making the helmsman able to take necessary precautions to avoid any breakdown on the propulsion system.
Verification method: Analysis, Demonstration
Verification level: FAT

Verification requirement: Analysis and demonstration shows that the cockpit panel is in accordance with requirement.
Acceptance Criteria: Verify that the cockpit panel is in accordance with requirement.
Contractor Response:

3.2.12.11 Cockpit panel II

Categorised by: Weight 10
Requirement: The cockpit panel and instrumentation shall be protected against condensation.
Verification method: Analysis, Demonstration
Verification level: FAT
Verification requirement: Analysis and demonstration shows that the cockpit panel is in accordance with requirement.
Acceptance Criteria: Verify that the cockpit panel is in accordance with requirement.
Contractor Response:

3.2.12.12 Cockpit switch panel I

Categorised by: Weight 10
Requirement: All switches in the cockpit shall be gathered in one common switch panel.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect that the cockpit switches are in accordance with requirement.
Acceptance Criteria: Verify that the cockpit switches are in accordance with requirement.
Contractor Response:

3.2.12.13 Cockpit switch panel II

Categorised by: Weight 10
Requirement: The cockpit switch panel shall be equipped with at least two free switches for future growth.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect that the cockpit switches are in accordance with requirement.
Acceptance Criteria: Verify that the cockpit switches are in accordance with requirement.
Contractor Response:

3.2.12.14 Cockpit switch panel III

Categorised by: Weight 10

<i>Requirement:</i>	The cockpit switch panel shall be equipped with at least the following switches: Bow searchlights, working lights, inside lights, bilge pump, navigation lights, AIS, blue light, siren.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the cockpit switches are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the cockpit switches are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.12.15 Cockpit instrumentation I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	In addition to the indicators ref. 3.2.12.10, an exhaust temperature sensor and a bilge water sensor connected to the alarm panel in cockpit shall be installed.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that cockpit instrumentation is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that cockpit instrumentation is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.12.16 Cockpit instrumentation II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	A fuel level gauge shall also be installed.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that cockpit instrumentation is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that cockpit instrumentation is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.12.17 Levers I

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Two levers for throttle and pitch shall be integrated in a common box on the right side of the wheel.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect technical documentation and demonstrate that the levers are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the levers are in accordance with requirement.

Contractor Response:

3.2.12.18 Levers II

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	A separate lever for disengage/engage water jet shall be mounted within range of the helmsman on the right hand side.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect technical documentation and demonstrate that the levers are in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the levers are in accordance with requirement.
<i>Contractor Response:</i>	

3.2.12.19 Dead man's switch

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Dead man's switch shall be installed on the right hand side of the helmsman's seating position, and be adapted to be used with the Coastguards' standard boat suit, Viking PS4052, which has a hole for the switch on the right thigh-pocket.
<i>Verification method:</i>	Demonstration, Test
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Demonstrate that the dead man's switch is located in accordance with requirement and test the functionality of the dead man's switch.
<i>Acceptance Criteria:</i>	Verify that the dead man's switch is located in accordance with requirement
<i>Contractor Response:</i>	

3.2.13 Diesel tank(s)

3.2.13.1 Refuelling

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The diesel tank(s) shall be equipped with a stainless filling cap and be possible to refuel through a common filling hose.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the filling cap is made of stainless steel and the filling hoses are in accordance with requirement. Demonstrate that it is possible to perform a refuelling without spilling.
<i>Acceptance Criteria:</i>	Verify that the refuelling arrangement is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.13.2 Refuelling II

<i>Categorised by:</i>	Weight 10
------------------------	-----------

<i>Requirement:</i>	The location of the refuelling point shall take into consideration that the FRB will be used on both sides of the mother vessel.
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that the location of refuelling point is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the refuelling arrangement is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.13.3 Refuelling III

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	Air evacuation capacity from the diesel tank(s) shall be sufficient to allow a refuelling rate of at least 30 litres per minute, without spilling.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Demonstrate that it is possible to perform a refuelling in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the refuelling arrangement is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.13.4 Diesel system

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The diesel system shall be equipped with a water separator and a filter, or a combined unit, with good access for drainage and control of the unit(s).
<i>Verification method:</i>	Inspection, Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Inspect that a water separator and filter are installed. Demonstrate that the access is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the diesel system is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.13.5 Drainage

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The diesel tank(s) design shall enable possibility for drainage at the lowest point and enable easy access for internal cleaning of the tank.
<i>Verification method:</i>	Demonstration
<i>Verification level:</i>	FAT
<i>Verification requirement:</i>	Demonstrate that the diesel tank(s) is in accordance with requirement.

Acceptance Criteria: Verify that the diesel tank(s) is in accordance with requirement.
Contractor Response:

3.2.14 Towing and mooring

3.2.14.1 Bow towing hook

Categorised by: Weight 10
Requirement: The boat shall be equipped with a pad eye in the bow, just above the waterline, designed for towing of the boat in 5 knots in calm waters.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the bow towing hook and it's documentation showing that the towing hook is in accordance with requirement.
Acceptance Criteria: Verify that bow towing hook is in accordance with requirement.
Contractor Response:

3.2.14.2 Stern towing hook I

Categorised by: Weight 10
Requirement: The FRB shall be equipped with a stainless towing hook in the centre of the stern, releasable from the cockpit in both loaded and unloaded condition.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the stern towing hook and its certificates showing that the towing hook is in accordance with requirement.
Acceptance Criteria: Verify that stern towing hook is in accordance with requirement.
Contractor Response:

3.2.14.3 Stern towing hook II

Categorised by: Weight 10
Requirement: The stern towing hook's SWL shall at least be equivalent to the pulling force of the FRB.
Verification method: Inspection
Verification level: FAT
Verification requirement: Inspect the stern towing hook and its certificates showing that the towing hook is in accordance with requirement.
Acceptance Criteria: Verify that stern towing hook is in accordance with requirement.
Contractor Response:

3.2.14.4 Mooring

Categorised by: Weight 10
Requirement: Both sides of the boat shall be possible to moor safely along side a quay, or similar.

<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	Inspect that the mooring arrangement is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the mooring arrangement is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.15 Fire extinguishing

3.2.15.1 Fixed fire system

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The machinery space shall be equipped with a manually fixed aerosol fire extinguishing system, releasable from the helmsman's position. The aerosol system shall be type approved according to IMO MSC/Circ. 1007.
<i>Verification method:</i>	FAT
<i>Verification level:</i>	Inspection
<i>Verification requirement:</i>	Inspect documentation, showing that the fixed fire system is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the fixed fire system is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.15.2 Fire extinguisher

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The fire extinguisher shall be installed in a water proof cabinet, easy accessible, aft in the boat.
<i>Verification method:</i>	HAT
<i>Verification level:</i>	Inspection
<i>Verification requirement:</i>	Inspect that the fire extinguisher cabinet and location is in accordance with requirement.
<i>Acceptance Criteria:</i>	Verify that the fire extinguisher cabinet and location is in accordance with requirement.
<i>Contractor Response:</i>	

3.2.16 Documentation

The system documentation contains all relevant information about the FRB, its integration and components, their spares, tools and test equipment. The system documentation enables the system managers, operators, maintainers and trainers to perform configuration management and to use, maintain and handle the equipment correctly and in accordance with its purpose, and fully attain vessel, system, equipment and personnel safety. All publications therefore contain eye-catching and to the point warnings and instructions for the safe handling of all relevant operations, components and parts of the delivered system.

The system documentation also comprises data and information needed for NDLO's maintenance planning database. In short; the system documentation contains all information

which NDLO will need during the utilization, support and decommissioning stages of the delivered and installed system with its components, parts and dedicated tools, equipment and information of poisonous or toxic substances.

3.2.16.1 Documentation content general requirements

Categorised by: Weight 10
Requirement: The Contractor shall deliver information in compliance with form 5008 28. feb 2011
Verification method: Inspection
Verification level: HAT
Acceptance Criteria: The delivered information includes the content as specified in form 5008 28. feb 2011
Contractor Response:

3.2.16.2 Documentation language

Categorised by: Weight 10
Requirement: The documentation shall be in Norwegian.
Verification method: Inspection
Verification level: HAT
Acceptance Criteria: All documentation is in Norwegian.
Contractor Response:

3.2.16.3 System Handbooks

Categorised by: Weight 10
Requirement: The Contractor shall deliver system handbooks for the Vessel according to form 5008 28. feb 2011 chapter 4 – System handbooks. The technical documentation of the system shall be delivered in an electronically editable format in accordance with form 5008 28. feb 2011 Documentation Specification chapter 7 - Formats:- System handbooks in accordance with level 4
Verification method: Inspection
Verification level: HAT
Acceptance Criteria: The system handbooks meet the standard for information content as described in form 5008 28. feb 2011 chapter 4 – System handbooks.
Contractor Response:

3.2.16.4 Technical handbooks

Categorised by: Weight 10
Requirement: The Contractor shall deliver technical handbooks for all identified main components in accordance with form 5008 28. feb 2011 chapter 5 - Technical Handbook (However, for off-the-shelf/existing equipment manufacturer's existing technical documentation may be accepted at contract award as a whole or in part, if it meets NDLO's main objective for technical documentation).

Verification method: Inspection
Verification level: HAT
Acceptance Criteria: The technical handbooks meet the standard for information content as described in form 5008 28. feb 2011 chapter 5 – Technical Handbook.

Contractor Response:

3.2.16.5 Figures/drawings

Categorised by: Weight 10
Requirement: Technical drawings and figures made or modified under this Contract shall also be separately delivered electronically in the original format according to form 5008 28. feb 2011 chapter 7 - Formats. The final delivery format is to be agreed upon in cooperation between the Contractor and NDLO.

Verification method: Inspection
Verification level: SAT
Acceptance Criteria: Technical drawings and figures made or modified under this Contract are in according to form 5008 28. feb 2011 chapter 7 - Formats.

Contractor Response:

3.2.16.6 Certificates

Categorised by: Weight 10
Requirement: Each boat shall be delivered with the following certificates:
- Type approval according to Marine Equipment Directive (MED) with ref. to MED Item number A. 1/1. 20(Fast Rescue Boat)
- Certificate of Conformity
- Work shop certificates
- Certificate for lifting and towing equipment
- Type approval certificate for the equipment

Verification method: Inspection
Verification level: At Delivery of Vessel
Acceptance Criteria: One set of original certificates and one electronic copy delivers with each boat.

Contractor Response:

3.2.16.7 Codifications data for Spare parts

Categorised by: Weight 10
Requirement: The Contractor shall deliver codification data for recommended spare parts according to form 5054.

Verification method: Inspection
Verification level: HAT

Acceptance Criteria: Codification data is defined according to form 5054 for all recommended spare parts

Contractor Response:

3.2.16.8 International system of units (SI)

Categorised by: Weight 10

Requirement: All units for dimensions, weight, temperatures etc should be according to SI.

Verification method: Inspection

Verification level: HAT

Acceptance Criteria: SI units are used in all documentation.

Contractor Response:

3.2.16.9 ISO symbols

Categorised by: Weight 10

Requirement: Drawings, symbols and diagrams shall use ISO symbols.

Verification method: Inspection

Verification level: HAT

Acceptance Criteria: ISO symbols are used in all documentation.

Contractor Response:

3.2.16.10 Documentation format

Categorised by: Weight 10

Requirement: The technical documentation of the system shall be delivered in paper format and in electronically editable format in accordance with form 5008 28. feb 2011 Documentation Specification chapter 7 - Formats: - Technical handbooks and components, in accordance with Level 3 (indexed and searchable pdf) or better. Deliveries as follows:

- paper copies
- 1 electronic copy on CD
- 1 additional paper copy for each FRB

The final delivery formats shall be tested and agreed upon between the Contractor and NDLO.

Verification method: Inspection

Verification level: HAT

Verification requirement:

Acceptance Criteria: The inspection confirms compliance with form 5008 28. feb 2011 Documentation Specification chapter 7 - Formats.

Contractor Response:

3.2.16.11 Binding format

Categorised by: Weight 10

<i>Requirement:</i>	The technical documentation in paper format shall be delivered in bindings of type black AGRIPA, with plast pocket in front an 4 holes according to NS 4137.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	HAT
<i>Verification requirement:</i>	
<i>Acceptance Criteria:</i>	The inspection confirms compliance with form 5008 28. feb 2011 Documentation Specification chapter 7 - Formats.
<i>Contractor Response:</i>	

3.2.16.12 Maintenance planning data

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The Contractor shall deliver data concerning preventive maintenance planning and shall as a minimum contain the following data: <ul style="list-style-type: none">• Equipment number i.a.w. SGS• Location (on board)• Name of component/module/part• Part of (component/module)• Model/type• producer's name• producers part number• producers serial number• time between planned maintenance/routines• delivered date• description of the specific maintenance
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	At Delivery of Vessel
<i>Verification requirement:</i>	
<i>Acceptance Criteria:</i>	The information listed is provided and audited for all identified maintenance tasks for the system. The information is consistent with the system maintenance documentation and delivered in a NDLO Maintenance database.
<i>Contractor Response:</i>	

3.2.16.13 Spare parts

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The Contractor shall deliver spare-parts to meet demand for 2 years supplies for each boat based on MTBF and MTBM and 500 running hours a year.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	At Delivery of Vessel
<i>Verification requirement:</i>	
<i>Acceptance Criteria:</i>	The spare parts are supplied.
<i>Contractor Response:</i>	

3.2.16.14 Consumables

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	The Contractor shall deliver Consumables to meet demand for 2 years supplies for each boat based on MTBF and MTBM and 500 running hours a year.
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	At Delivery of Vessel
<i>Verification requirement:</i>	
<i>Acceptance Criteria:</i>	The spare parts are supplied.
<i>Contractor Response:</i>	

3.2.16.15 Labelling for storage of spare parts and consumables

<i>Categorised by:</i>	Weight 10
<i>Requirement:</i>	All delivered spare parts and consumables shall be labelled with Name, Part number, Serial number (where available), and NATO stock number (where available).
<i>Verification method:</i>	Inspection
<i>Verification level:</i>	At Delivery of Vessel
<i>Verification requirement:</i>	
<i>Acceptance Criteria:</i>	All spare parts and consumables are labelled with Name, Part number, Serial number (where available), and NATO stock number (where available).
<i>Contractor Response:</i>	