Part VII – Technical Specification

IMPORTANT:

It is essential that the tenderer agrees to meet with all the Essential Requirements (labeled as [E]) stipulated in the Technical Specifications and indicates in the tender submission. Otherwise the tender submission will not be considered.

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Chapter 1 – General Provision

1 Introduction

1.1 This document (or "Technical Specifications (TS)) sets out the requirements of the Government in relation to the **two (2) speedboats** (hereinafter referred to as Vessel) for the use by the Hong Kong Marine Department (hereinafter referred to as MD or "user department"). For the avoidance of doubt, references to "Vessel" shall mean **each** of these two speedboats.

1.2 Tenderers shall note that all the specifications stated in this Part VII of the Tender Documents ("this Part") are classified and labelled as follows:

1.2.1 Essential Requirements [E]; and

1.2.2 Those specifications that are not labelled with [E] shall equally form part of the Contract but the Government will not conduct any check at tendering stage to determine if the products offered comply with these specifications.

1.3 All specifications identified as [E] are Essential Requirements. As part of the tender evaluation during the tendering stage, the Tenderer shall submit all the information sufficiently detailed to substantiate that the product and the services offered meet the Essential Requirements as stipulated in these TS, failing which its tender will not be considered further.

1.4 All Technical specifications which are not classified as Essential Requirements shall also form part of the Contract and be of equal materiality and importance upon the award of the Contract. The non-compliance with any specifications set out in these Technical Specifications shall the same consequences as specified in the Contract.

1.5 The Vessel shall be Ready for Use before the Delivery Date and delivered by the Delivery Date as per the schedule stipulated on Schedule 2 – Delivery Schedule.

1.6 The Government New Construction Section (GNC) of MD is the section responsible for the procurement of the Vessel for the Government of the Hong Kong Special Administrative Region (HKSAR) of the People's Republic of China (hereinafter referred to as Government). Electrical and Mechanical Services Department (EMSD) will oversee the Communication and Electronic Navigation Equipment (ENE) technical acceptance.

2 Design and Construction Responsibility

2.1 It is the SOLE responsibility of the Contractor, and the Government relies on the professional judgment and skill of the Contractor, to supply a Vessel which is safe, fit and suitable for the operation of the user department and which meets all the Essential Requirements, and which meets all the Essential Requirements and the specifications in these TS not labeled as [E], which include without limitation requirements for safety, hull form design features, structure, method and materials for construction and fitting out, stability, sub- division and operational efficiency.

2.2 Notwithstanding the submission of the preliminary plans and drawings by the Contractor then as part of its tender for the Contract, all plans and drawings of the Vessel except the design stresses and scantling, shall be submitted to GNC for approval before completion of the Vessel design.

2.3 The design stresses and scantling including internal structural members shall be determined in according to the rules of Recognised Organisation. All designed drawings shall be approved by Recognised Organisation before submitting to MD for comment.

2.4 The Contractor shall design, build and supply the Vessel in full compliance with the requirements given in these TS which, to that extent, may be over and above that is normally required by any statutory and Recognised Organisation's rules.

2.5 If any contradiction between the rules and regulations of an RO and the TS, the final decision shall be made by the GNC authority.

2.6 Even if the Contractor may appoint a Sub-contractor to design the Vessel with the prior written consent of the Government, the Contractor shall not be relieved of its obligations under the Contract through such appointment, and the Contractor shall be responsible for all acts, defaults and omissions of the sub-contractor as if they were its own.

3 Warranty Services During the Warranty Period

3.1 The Contractor is required to be a Government Dockyard Contractors (Item III – Hull, Deck & Tailshaft Group II) or has entered into a binding sub-contract with a Government Dockyard Contractors (Item III – Hull, Deck & Tailshaft Group II), which shall provide and is capable of providing, the Warranty Services for the Vessel during the Warranty Period.

3.2 Notwithstanding and without prejudice to the Contractor's obligation to provide the Warranty Services

for the Vessel under the Conditions of Contract, the original copy of the manufacturer's warranty certificates and all related manuals and documents in respect of all the Equipment valid for 12 months from the date of Acceptance Certificate of the Vessel, shall be delivered to MD upon Delivery Acceptance.

3.3 The full scope of the Warranty Services is more particularly set out in Annex 1 to these TS.

3.4 The Contractor is responsible for arranging the Vessel for Guarantee Slipping at the end of the 12-month Warranty Period. In addition to any defects which the Contractor may be required to fix under Clause 18 of the Part IV (Conditions of Contract), the Contractor shall also be responsible for the rectification of any defects found in the course of Guarantee Slipping. The full scope of the services to be provided as part of the Guarantee Slipping is more particularly set out in Annex 1 to these TS.

4 Acceptance and Delivery

4.1 Acceptance of the Vessel (including all Equipment) is to be carried out in two parts:

Part 1: Technical Acceptance

Part 2: Delivery Acceptance

4.2 Technical Acceptance

4.2.1 This includes all the technical, mechanical and electrical tests and trials as required in this Part and those considered necessary by the Government, including equipment tests, anchoring tests, stability test and bottom survey on the slipway in the HKSAR, the Official Speed Trial as mentioned in paragraph 6.4 of this Chapter 1, the Endurance and Performance Test as mentioned in the paragraph 6.5, Manoeuvrability Test as mentioned in the paragraph 6.6, Crash Stop Test as mentioned in paragraph 6.7 and other tests as mentioned in paragraph 6.8 and 6.9 of this Chapter 1, the on-site commissioning tests for the ENE as mentioned in paragraph 36 of Chapter 2 of this Part and all other verification tests to determine whether or not the Vessel including the Equipment has been supplied in accordance with the all specifications set out in these Technical Specifications (excluding only the Excluded Specifications) .

4.2.2 The Contractor shall pay for all material and labour costs for carrying out the tests and trials stated in sub-paragraph 4.2.1 of this Chapter 1.

4.2.3 If the Vessel still cannot pass all of the tests comprised in the Technical Acceptance by the Delivery Date specified in the Contract, the options available to the Government are set out in Clause 12 of the Conditions of Contract and other applicable provisions of the Contract.

4.3 Delivery Acceptance

4.3.1 The Vessel, after its successful completion of Technical Acceptance, shall be delivered at the Contractor's expense to the Government Dockyard. If either of the Vessels or both of them (together with all Equipment and other Deliverables) cannot be delivered to the Government Dockyard in Ready for Use condition by the Delivery Date specified in Schedule 2, and that the delay lasts for more than 120 days, the Government has the power to reject the delayed Vessel(s) or both Vessels, and the Equipment and other Deliverables relating to the delayed Vessel(s) or all Equipment and other Deliverables, and the Contract may be terminated according to the applicable terms stipulated in the Contract including Clause 13 of the Conditions of Contract.

4.3.2 On delivery, the Vessel must be in Ready for Use, clean, tidy and fully fitted and operational condition.

4.3.3 The Contractor must demonstrate to MD that all machinery, electrical and electronic equipment are in good working order; and must hand over the Vessel, its fixtures and equipment to MD in good and complete condition.

4.3.4 The Delivery Acceptance of the Vessel shall be carried out by GNC in accordance with the terms stipulated in the Contract including Conditions of Contract, this Part, and Annex 9 to this Part. The Delivery Acceptance is only completed when the Acceptance Certificate is issued by the Director of Marine.

4.3.5 Not later than six weeks before the Delivery Acceptance of the Vessel, the Contractor is required to submit to GNC four copies of the Inventory List covering all items of or relating to the Vessel including all engines, on-board equipments, manuals, documentation, spares, stores, Equipment for testing in respect of the entire Vessel. The Inventory List shall need to be approved by MD before the day of Delivery Acceptance and covers everything which the Contractor is required to deliver under the Contract. At the Delivery Acceptance of the Vessel the approved Inventory List will be used to check

that all the items have been delivered to MD in a satisfactory state. Details of each inventory item shall include: item name, description, type, quantity, manufacture's name, manufacturer's part reference number and/or serial number, and the items' location in the Vessel.

4.3.6 The items specified in paragraph 38 of Chapter 2, and all items set out in the Inventory List in the form as approved or stipulated by the Government shall be delivered to MD at the Delivery Acceptance of the Vessel. Delivery Acceptance will follow GNC's Delivery Acceptance Procedures as set out in Annex 9 or otherwise as stipulated by the Government. The Contractor must provide 14 days advance notice in writing for Vessel delivery when the Vessel is considered to be completed in accordance with the Contract and Ready for Use and to be delivered for the Delivery Acceptance. The Government will not accept delivery if after undergoing the tests and trials in the Technical Acceptance, the Government does not consider that the Vessel is in Ready to Use condition.

5 Survey and Inspection

5.1 Tenderers shall note that the unit price per Vessel quoted in the Schedule 1 – Price Schedule in Part V shall be deemed to have included the cost of surveys to be carried out by the relevant Recognised Organisations in respect of that Vessel (if required to be arranged by the Contractor under the Contract) and survey visits by GNC inspectors and surveyors, and the representatives of the user department.

5.2 The Tenderers shall state the regulations or rules from which of the Recognised Organisation or other Organization acceptable by MD based on which the proposed Vessel will be designed and built.

5.3 All electronic items and their installations shall be approved and inspected by **EMSD** as part of the Technical Acceptance.

5.4 Subject to paragraph 5.6 of this Chapter 1, an advanced written notice of not less than 5 working days (if the Vessel is located in China (including Hong Kong) and 10 working days (if the Vessel is located in any other part of the world) must be given to GNC before the representatives of GNC and representatives of the user department are invited to conduct a survey visit of the Vessel. The Contractor shall be fully responsible for any delay if the Contractor fails to give adequate notice as aforesaid.

5.4.1 An Implementation Timetable, in the form set out in Annex 4 to this Part, setting out the major milestones and their scheduled completion dates and incorporating the Delivery Dates specified in Schedule 2; and

5.4.2 The Timetable for Major Items Inspection in the form set out in Annex 6 to this Part; and

5.4.3 The Timetable for submission of Drawing in the form set out in Annex 5 to this Part, shall each be submitted to GNC for approval by the respective deadlines specified in Clause 11 of the Conditions of Contract . The Delivery Date(s) for the Vessel as stated in the Implementation Timetable shall be no later than those set out in Schedule 2. The completion dates for the milestones as specified in the Implementation Timetable in the form set out in Annex 4 and any other milestones which the Contractor consider necessary shall be completed by the Contractor and subject to GNC's acceptance. The Implementation Timetable shall also be consistent with the summary table of survey visits set out in Schedule 10 and the two timetables mentioned in 5.4.2 and 5.4.3 of this paragraph. The Government may suspend payment if any of the timetables required herein has not been submitted for GNC's acceptance or GNC does not accept any of them or if the progress of work does not comply with any of them as approved by the GNC.

5.5 A monthly work progress report with photos evidencing the progress is required to be submitted to MD during the construction of the Vessel.

5.6 After arriving at the site for a survey visit, if the MD Government officer considers it is unsafe to carry out the test or inspection, the test/inspection will not be carried out. The Contractor shall have to arrange another additional survey visit at the Contractor's own expense. The Government shall not be responsible for any delay arising from any delay in conducting the survey visit due any safety issue as specified in this paragraph.

5.7 Where any fee charge and associated expense are payable for the services of a Recognised Organisations which services are necessary in order to fulfil any obligation of the Contractor under the Contract, the Contractor is responsible to pay the Recognised Organisations all such fees, charges and the associated expenses. Such fees shall include charges for drawing approval, surveys (if deemed necessary), issues of certificates, and any other expenses payable to the Recognised Organisations.

5.8 If the Vessel is built in any part of the world outside the HKSAR, the Contractor is required to arrange and pay the Government all expenses incurred by the Government for arranging the staff of MD

and user department officers to carry out survey visits/construction progress visits to the Vessel which shall include all travelling and Government Officers allowances based on Annex 12 - Government Subsistence Allowance Rate. The Tenderer shall propose the survey visits for the Main Inspection Items in Schedule 10 and estimate the expenses allowed that deemed to have been included in the Total Contract Price in Schedule 1. Duration and the number of visits shall enable the representatives to conduct the survey visit in accordance with the Contract.

6 ***Official Sea-Trial and Speed Requirements***

6.1 The Contractor shall submit for MD approval, an Official Sea Trial programme, which shall include details of proposed procedures for carrying out the Official Speed Trial, manoeuvring test, planning tests, crash stop test, endurance test, anchor test and inclining experiment. This programme must be submitted to MD in not less than 14 working days before the trials commence.

6.2 Like all other tests and trials to be conducted as part of the Technical Acceptance, the Contractor is required to carry out the Official Sea-Trial at its own expense (including the expense of petrol, lubrication oil, crew and other necessary expenses), in the presence of MD officer(s).

6.3 The Contractor shall provide a trial report to GNC after completion of the above tests. The report shall contain information regarding method of test, sea, weather and wind conditions, Vessel loading condition, heel angle during turn (for forward turning with engine running), and any other relevant information; and shall be prepared in a format agreed by GNC.

6.4 Official Speed-Trial

6.4.1 As part of the Technical Acceptance as specified in paragraph 4.2 of this Chapter 1, the Contractor shall carry out an official speed trial ("Official Speed Trial") in the presence of GNC officers or their appointed agents, or MD authorized representatives. Of the essence the Vessel shall achieve the Contract Speed.

6.4.2 The actual mean speed of the Vessel (i.e. NOT theoretical) shall be measured during the Official Speed Trial runs to determine if the Contract Speed can be achieved. The speed calculations must NOT be corrected by wind, wave, tidal current, shallow water effects and weather condition.

6.4.3 The mean speed is to be calculated as the arithmetic mean of not less than FOUR continuous runs, i.e. TWO runs in each direction. The speed for each run shall be taken by measuring the time of the vessel running for one nautical mile between two poles or other measuring method acceptable to MD.

6.4.4 The Contract Speed is considered not achieved if the Contract Speed cannot be obtained during the Official Speed Trial after a total of FIVE runs in each direction.

6.4.5 The Contract Speed to be achieved by the Vessel in the Official Speed Trial shall be the minimum highest achievable speed of **35 knots**, and the Vessel under the official speed trial conditions as stated in Annex 8 to this Part. If the Vessel fails to achieve the minimum highest achievable speed under the aforesaid conditions, the Government will deem that the Vessel has failed to pass the Official Speed Trial and therefore Technical Acceptance. The Government may reject the Vessel and terminate the Contract or exercise such other options as specified in Clause 12 of the Conditions of Contract and other applicable provisions of the Contract.

6.4.6 The instrument use in measuring the Contract Speed for the Official Speed Trial is to be provided either by:

6.4.6.1 The Contractor provided that the speed measuring device has been calibrated by a certified body acceptable by MD; or

6.4.6.2 Stopwatch; or

6.4.6.3 Global Positioning System (GPS) supplied by the Government.

6.4.7 The Vessel must be in the trial conditions (see Annex 8 to these Technical Specifications for the conditions of the trials) during the Official Speed Trial. All equipment shall also be in operation during the trial.

6.4.8 The speed, time of the day, engine running conditions, sea condition, etc., shall be properly recorded by the Contractor, and signed as witnessed by GNC surveyor (or their representatives) during the trial. A copy of the report shall be given to GNC before Delivery Acceptance.

6.5 Endurance and Performance Test

The Endurance and Performance Tests for the engine's load/speed against the Vessel's Speed/fuel consumption with engine's operating parameters shall be conducted and the testing results shall be recorded as per the requirements stipulated in Annex 13 to this part.

6.6 Manoeuvrability Test

6.6.1 Maximal manoeuvring speed to be achieved by the Vessel in the Manoeuvrability Test shall not be less than 35 knots.

6.6.2 Forward Turning Circle tests to port and starboard sides with both engines and single engine running shall be conducted. The minimum time for turning to both sides at 15^{o}, 90^{o}, 180^{o}, 270^{o} and 360^{o} shall be recorded.

6.6.3 The results for above two tests shall form part of Sea-Trial Report that shall be submitted to GNC before Delivery Acceptance.

6.7 Crash Stop Test

The minimum time and distance from full ahead to stop and to full astern shall be determined at the Crash Stop Test. The minimum time and distance requirements are set out in Annex 8. The testing results shall be recorded and form part of Sea-Trial Report that shall be submitted to GNC before Delivery Acceptance.

6.8 Astern Running Test / Emergency Steering Test

The astern running and the emergency steering operation shall be recorded and form part of Sea-Trial Report that shall be submitted to GNC before Delivery Acceptance. The conditions of the tests are set out in Annex 8.

6.9 The following tests shall be conducted and the testing results shall be recorded and form part of Sea-Trial Report that shall be submitted to GNC before Delivery Acceptance:

6.9.1 Engine Repeat Starting Tests;

6.9.2 Anchoring Test;

6.9.3 Noise level Test.

7 Support Services

7.1 The Vessel must be designed for through life support and easy maintenance in the HKSAR based on an operation profile and minimum life expectancy as mentioned in Chapter 2, paragraph 5.

7.2 The requirements specified in the above paragraph 7.1 shall apply to the main engines and all other Equipment installed in the Vessel.

7.3 The above applies not only to main engine but also to all other Equipment installed in the Vessel. Support and maintenance services must be available (i.e. serviceable) in Hong Kong in respect of all Equipment installed in the Vessel and return of the whole or part of the Equipment to the original place of manufacturer or supplier shall not be necessary in order to carry out any repair work.

Chapter 2 – Technical Specifications

1. Introduction

1.1 Without prejudice to the generality of Chapter 1, this Chapter contains the more particular technical specifications for the Vessel. The Vessel shall be equipped and fitted with all items specified in this Chapter 2 (viz including all Equipment and fittings). All such Equipment and fittings shall comply all specifications set out in this Chapter 2 as well as those specified in the tender then submitted by the Contractor including product information and literature supplied by the Contractor for these items. The significance of Essential Requirements and Criteria for Technical Assessment are explained in paragraphs 1.3 and 1.4 of Chapter 1 above.

1.2 Whilst the Contractor is required to exercise its professional expertise and knowledge to come up with an appropriate design for the Vessel which can comply with all requirements of the Contract, a Guidance General Arrangement Plan is attached at Annex 3 to these TS for guidance purposes.

1.3 The Vessel shall be designed for navigation in waters, up to and including Beaufort scale 6 and sea state 5 and used within the operating temperature of -20^{O}C to +60^{O}C.

1.4 Principal Features:

Length Overall:	9 – 10 metres	[E]
Max. Breadth:	Not more than 4.2 metres	[E]
Max. Mean Draught:	not more than 0.7 metre	[E]
Max Air Draught:	2.95 metre	[E]
Material of Hull Structure:	Aluminium Alloy	[E]
Hull form:	Catamaran	[E]

1.5 Contract Speed: 35 knots at the engine declared (rated) power with the Vessel under Official Speed Trial Conditions as stated in Annex 8 to this Part.

1.6 The Vessel shall be designed to accommodate 2 crews and 4 officers. All of them shall be provided with the dampened seats as stipulated in paragraph 15 of Chapter 2 to this part. [E]

1.7 The general arrangement shall enhance the effective operation of the Vessel based on its usage and operational profile as specified in paragraphs 4 and 5 of this Chapter 2 respectively.

1.8 The maximum permanent list of the Vessel shall not be greater than one degree.

1.9 The Vessel shall be free of unacceptable structural vibrations and excessive porpoising at all speeds so that there is no loss of directional control.

1.10 Berthing requirements of the Vessel shall match with the designated points of berthing at the Government Dockyard and HPS Operational Base.

2. Rules and Regulations

2.1 The Vessel and all related works shall be in compliance with the requirements of the various regulatory bodies and rules listed below that are in force at the time of Contract signing insofar as they may apply:

2.1.1 Relevant Rules and Regulations applicable to this type of vessel for the construction of hull and machinery from one of the Recognized Organisations by HKSARG;

2.1.2 International Regulations for Preventing Collisions at Sea 1972 (as amended by IMO resolution A.464(XII) and A.626(XV));

2.1.3 International Electro-technical Commission (IEC) Regulations for the Electrical and Electronic Equipment.

2.1.4 International Telecommunications Union recommendations in the International Radio Regulations (ITU-R).

2.1.5 Quality and standards of the weldings shall comply with the rules of a Recognised Organisation or American Welding Society (AWS) or other applicable international standards or rules acceptable to MD.

2.1.6 The Vessel and other Deliveries shall be designed and manufactured to at least the standards as specified in these Technical Specifications. For items which are not specified above, then to at least to one of those standards prescribed by or recommended by the following organizations:

BSI British Standards Institute

DIN	Deutsche Industrie Normen
FEM	Federation Europeenne de la Manutention
GB	Chinese Standard Institute
IEEE	Institute of Electrical and Electronic Engineers
ISO	International Standards Organisation
JIS	Japanese Industrial Standards

2.2 The Contractor shall note that although the Vessel is to be built to international Classification rules, the Vessel shall not be classed. The interpretation of the rules shall normally follow past and common practice. Nevertheless the final interpretation of rules shall rest with MD.

2.3 Quality and standards of construction not mentioned in this specification shall comply with the relevant international standards or rules.

2.4 The Contractor shall be required to submit a full list of applicable rules, regulations and standards to which the proposed Vessel complies during the design stage of the Vessel.

3. Shipyard

3.1 The Tenderer's shipyard design office shall be headed by a ship designer with professional qualification in ship design and construction such as corporate member of Naval Architecture Professional Institutions and supported by a number of professional and technical staff who shall have considerable years of experience in design and construction of vessel.

3.2 The Tenderer's shipyard possesses the essential shipbuilding and workshop facilities such as lifting gears, hull construction and calibration equipment, machinery installation and calibration equipment and vessel launching or slipping facilities. [E]

3.3 The Tenderer must fulfill the essential requirement concerning experience in vessel design and construction as specified in Item 1 of Annex C (Essential Requirements) to the Conditions of Tender. [E]

3.4 The Tenderer must fulfil the essential requirement concerning experience in vessel design and construction as specified in Item 1 of Annex C (Essential Requirements) to the Conditions of Tender.

3.5 The Vessel's design and construction shall be well planned.

3.6 The shipyard of the Tenderer has been awarded with a valid and subsisting Certificate of Quality Management System (ISO9000) issued by a Recognised Organisation as at the Tender Closing Date.

4. Statement of Purposes of the Vessel

The Vessel will be used by the Harbour Patrol Section (HPS) of Marine Department anywhere within Hong Kong waters. The operational purpose of the Vessel is to perform patrol duties at shallow and/or congested waters with required speed and maneuverability in Hong Kong Waters.

5. Operating Profile and Minimum Life Expectancy

5.1 The Vessel is required to be available for deployment at least 260 outings per year with each outing/days to be used over 7.5 hours in which 2 hours shall be at maximum speed of 35 knots at Sea State 2 or below.

5.2 The Vessel shall have a minimum life expectancy of 15 years from the issue date of the Acceptance Certificate.

6. Stability

6.1 The Vessel is required to comply with the stability requirements stated in the Annex 2 of these Technical Specifications. [E]

7. Hull

7.1 Hull Construction and Scantlings

The stresses and scantling for all structural members shall be determined in according to the rules of a RO.

7.2 Materials

The hull construction material shall be new and of a type which has been certificated by a RO or other entities acceptable by MD. Mill Certificates shall be obtained and records strictly maintained to match these to the various sections produced during Vessel manufacture.

7.3 The Contractor shall carry out quality control throughout the construction of the Vessel by their quality control personnel.

7.4 Welding and Fabrication

All welding and fabrication shall be implemented according to the rules of a RO, for example: "ABS Guide for Building and Classification High Speed Craft Section 15 – Welding and Fabrication" or American Welding

Society (AWS) or other international standards or rules acceptable to MD.
Welded Joints shall be carefully designed and constructed to conform to the latest established standards to prevent fatigue failure. Cutting for edge preparation shall be performed by qualified person to achieve correct angle, shape and smooth finish of the edges. Only qualified welders shall perform the welding work.
Certification of the qualifications of each individual welder shall be submitted by the Contractor. Welds installed using unqualified procedures or welding performed by non-certified welders shall be subject to removal by the Contractor at his own expense.

For the structure fabrication this shall include but not be limited to the following:

7.4.1 Inventory of incoming material, consumable components and machinery;
7.4.2 Traceability procedures for materials together with traceability identification codes which shall be serial and indexed to the controlled manufacturing procedures;
7.4.3 Lofting, cutting, fit up, welding, forming and dimensions of structural components;
7.4.4 Welding and inspection procedures identifying clearly the type and extent of NDT inspection carried out on the Vessel structure, normally not more than 10% of Ultrasonic Test (UT) and Radioactive Test (RT) is required;
7.4.5 Welding and inspection personnel qualification and certification;
7.4.6 Welding, machining, measuring and inspection equipment maintenance and calibration;
7.4.7 Procedures for non-conformance reporting and rectification of defects;
7.4.8 Design and manufacturing drawing control and procedures for revisions, updates and reissue of drawings.

7.5 The hull of the proposed Vessel shall be constructed so that it will be capable of sustaining frequent impacts during boarding and intercepting operations in sea conditions specified in paragraph 1.3 of Chapter 2 to these Technical Specifications.

7.6 The openings in hull and deck such as portlights, doors, hatch covers etc. shall comply with international standards or rules acceptable to MD.

7.7 Cathodic protection system shall be provided to protect the hull to suit for a minimum one year life with suitable numbers of anodes secured to the hull below the lightship waterline at the appropriate location.

7.7.1 The actual numbers, size and positions of the anodes and method of the securing shall strictly follow the instruction required by the proposed anode manufacturer.

8. Painting

8.1 Paints shall be of a fire-retarding marine quality, readily available in HKSAR and with manufacturer's authorised local technical support, and applied in accordance with manufacturer's specification. A painting report shall be submitted to MD upon completion of work.

8.2 Volatile Organic Compounds (VOC) content limits of the paints shall comply with the Controls and Requirements of the VOC Regulation (VOC content limits for regulated vessel paints and regulated pleasure craft paints) of the Regulation of Hong Kong Air Pollution Control Ordinance.

8.3 Painting Schedule shall be submitted for MD approval before the Completion Date stipulated in Annex 6 to this part. The proposal shall contain a list and the detailed specification of the paint intended to be used. Thickness of each coating shall be specified.

8.4 All painting work shall carry a one-year guarantee provided by the Contractor against defects in material and workmanship. The Contractor shall provide MD at Delivery Acceptance a letter of certification from the paint manufacturer to certify the application of the paint is under the paint manufacturer's quality control and in accordance to the manufacturer's requirements for the surface preparation, control of the temperature of the metal surfaces & atmospheric conditions, paint thickness; method of application etc.

8.5 Tributyltin (TBT) free fouling-release/anti-fouling paint shall be applied on the hull below water line for at least 2 years protection against the marine growth. TBT free Certificate issued by the paint manufacturer shall be submitted before the Delivery Acceptance.

8.6 All deck areas shall be covered with matt disruptive pattern multi tonal grey, hard wearing and anti-slip epoxy paint. A Sample shall be submitted to MD for approval prior to painting

8.7 Outboard engine cowlings and foam collarettes shall be painted with matt disruptive pattern multi tonal grey. The engine controls to be of a non-reflective grey matt paint.

9. General Arrangement

9.1 Whilst the Contractor is required to exercise its professional expertise and knowledge to come up with an appropriate design for the Vessel which can comply with all requirements of the Contract, a General Arrangement Plan is attached at **Annex 3 to Technical Specifications** for guidance purposes.

9.2 The Vessel shall be designed to accommodate 6 officers. The layout drawing shall be submitted in dwg file to the satisfaction of MD.

10. Deck Cabin

10.1 Deck cabin includes console, seating, space and toilet. Deck cabin design shall keep max air draught 2.95m.
10.2 Forward hinged door shall match cabin shape.
10.3 5 seats shall properly be arranged in cabin, the space provided shall be plan equipped with microwave & a small refrigerator (size not less than height 510 x width 440 x depth 470 mm). And a foldable table fitted for report writing and meeting.
10.4 An air conditioner (A/C) shall be installed for cabin. Genset for A/C and storage shall be arranged on rear of boat.
10.5 Design Collapsible equipment tower or folding tower to keep max air draught 2.95m.
10.6 Following shall be fitted in cabin:
- 10.6.1 One electric powered marine wall clock.
- 10.6.2 One swing-type metal rubbish bin with cover.
- 10.6.3 Hand holds and grab rails
- 10.6.4 Marine heavy duty straightline type wipers with water spray shall be provided for all front windows.

11. Hand Holds and Grab Rails

11.1 Sufficient internal and external hand holds and guard rails shall be fitted on the Vessel.
11.2 Guard rails on the main deck outside the housing must be non-reflective and fabricated to suit for a marine environment, i.e. aluminium alloy/high grade stainless steel (SS 316) or other appropriate non-corroding material.
11.3 The design and arrangement of all onboard fittings, including guard railings, their position, fitting arrangement, etc. shall be made acceptable to and approved by MD before fitting.

12. Consoles

12.1 The layout of control console shall be submitted for MD approval before the Completion Date stipulated in Annex 5 to this part.
12.2 Console
- 12.2.1 The coxswain controls and displays shall easily be reached by a normal Asian stature in his/her fixed position standing without needing to extend arms and field of view of coxswain.
- 12.2.2 The console shall be designed such that from normal working position the total required left-to-right viewing angle shall not exceed 190 degrees, and preferably whenever possible through appropriate control-display layout.
- 12.2.3 The controls or displays of following equipments shall be installed in the Console and located in front of coxswain and commander in natural positions, with the highest priority devices being located in prime positions. Controls shall ideally be positioned between elbow and shoulder height. Instrument panels and display screens shall be ergonomically positioned for operator comfort without any impediment to his visibility. Steering Control Wheel shall be provided with non-slip steering wheel;
  - Engine Throttle Control Head shall be provided on the right hand side of the steering wheel;
  - Engine Monitoring Panel;
  - Engine Start Control;
  - Loudhailer Control Unit & Microphone;
  - Compass;
  - Electric Horn;
  - Siren and Flashing Beacon Control Panel;
  - Navigation Lights, Search Lights and Flood Lights Switch Panel;
  - GPS Receiver;
  - Radar/Chart Plotter Control and Displays;
  - UHF mobile transceiver.

12.3 All indication lights, illumination of instrumentation gauges and panel lighting within the console area shall be fitted with dimmers for day and night operation.
12.4 One magnetic compass shall be installed directly in front of the coxswain.
12.5 The control consoles shall have sufficient leg room.

13. Foldable Mast

To be satisfied air draught 2.95m limit, the Mast shall not only be designed to be rigid during normal operation, but also folded operate by one person in a safe manner at sea. Drawing with the operating mechanism shall be submitted for approval.

14. Lockers/Void Spaces

14.1 Lockers
Lockers or storage spaces shall be provided.

15. Seating and Attachment Systems

15.1 Three shock absorption (heavy duty dampers) seats with turntable (0 to 180 degree), adjustable seat height, fore and aft adjustment (160mm), adjustable back rest, foot step and inertia reel three-point seat belt shall be provided at the aft of Console for the coxswain and commander.

15.2 Four shock absorption (heavy duty dampers) seats shall be provided for 4 officers.

15.3 The Seats shall be designed to protect the operator from injury and optimize the body posture to mitigate the potentially harmful forces that occur during the Vessel in operations as specified in paragraph 4 and the operational profile as specified in paragraph 6 of this Chapter 2. (Such as Mechanical suspension with 2 double acting hydraulic damper)

15.4 Seating and arm rests shall provide with support for spinal neutral alignment and postural stability for each person up to the crew limit and also to prevent them from falling or being thrown on deck or overboard (Such as inertia reel three-point seat belt).

15.5 Basic Requirements of the Seats:

15.5.1 Material of the Structure: Steel and/or Aluminum Alloy.

15.5.2 Materials of Upholstery: Seat cushions, back rests and settees shall be Reinforced Nylon Laminated Neoprene/PVC.

15.5.3 Seats with the safety belts, the tension thrust should be able to withstand no less than 2,250 newtons, shall be classification society approval type and relative certificate to be submitted

16. Toilet

16.1 Toilet arranged inside cabin aft and a black water tank shall be arranged under deck. Toilet access door shall be from outside of cabin.

16.2 A toilet compartment with natural light for illumination and non-slip floor shall be provided and suitably fitted out with the followings:

16.2.1 One stainless steel wash basin inside area not less than 320 x 220mm with cold freshwater supply tap;

16.2.2 One mirror cabinet size 300 × 400mm (approx.);

16.2.3 One marine type toilet with marine sized bowl, electrical water pump and emergency manual double action piston pump for flushing purpose to the satisfaction of MD;

16.2.4 Two stainless steel wall mounting hooks (double clothes type);

16.2.5 High quality plastic perforated grating floor;

16.2.6 One electric exhaust fan;

16.2.7 One paper towel rack;

16.2.8 Stainless steel grip rails;

16.2.9 One liquid soap dispenser;

16.2.10 One paper towel waste bin.

16.2.11 The toilet door shall be fitted with louvers and louvers cover at the lower portion.

16.2.12 Grab rail shall be provided.

17. Fender

17.1 A robust and permanent solid foam filled fender collarets shall be durable to withstand knife thrusts and direct impacts. No air or inflatable fender will be accepted.

17.2 The fender shall be designed to absorb stresses applied to the Vessel whilst mooring or alongside other vessels.

17.3 The fender shall be tightly fixed to the hull and flush on the highest deck level.

17.4 The collar must be clear of the water when planning with full load and at rest with full fuel and no payload onboard.

17.5 The fender is to have excellent resistance to impact abrasion and to hot and cold climate extremes, and will not be affected by petrol, diesel, lubricating oil or chemicals.

17.6 The outer diameter of the fender shall be around 350mm. The bow section shall be comparatively larger than 350mm in order to suit bow-on boarding. Details of the design, dimensions and arrangement drawing of the fender shall be submitted to MD for approval prior to construction.

17.7 Provision for attachments of four (4) portable fenders at Port and Starboard side of vessel and four (4) portable fenders are to be provided. The manufacturer's certificate shall be provided for approval.

18. Bow

The bow shall be reinforced to withstand frequent boarding operations. Two forwards doors shall be provided on port and starboard side of hull. The design drawing shall be provided to MD for approval.

19. Transom and Stern Area

19.1 A tray with drains shall be attached to fore of the transom to accommodate the petrol filters, control wires and hydraulic steering pipes.

19.2 Protection/guard bars at the rear and outside of the engines shall be provided for protecting the engines from external damage but not considered as a fixed permanent structure for LOA measurement. The design and dimension shall be indicated in the GA that required to be submitted for MD approval before the Completion Date stipulated in Annex 5 to this Part.

19.3 Working platforms for engine inspection purpose shall be fitted.

20. Anchoring, Mooring and Lifting Strong Points

20.1 All anchor, swivel and mooring rope shall provide with certificate/type approval certificate from HKMD recognised classification.

20.2 One hot dip galvanized high holding power anchor with a galvanized swivel and 30m nylon rope shall be provided and stored at the recessed anchor stowage.

20.3 Four heavy duty of double braid mooring rope, in 28 mm. dia., shall be provided for Vessel (2 lengths each in 15 m. and 30 m.).

20.4 The Vessel shall be provided with the 4-point Lifting Points which shall be designed to lift up the vessel without damaging to the vessel's hull.

20.5 Mooring bollards shall be provided at bow and stern.

20.6 Mooring cleats shall be provided at Port and Starboard side of hull.

20.7 Load test shall be carried out for 4 lifting points of the vessel before delivery. The design of 4 lifting points shall be submitted by classic approval.

21. Engines

21.1 The Vessel shall be powered by the engines which shall be two marine four strokes outboard petrol spark ignition engines of adequate power for the Contract Speed. The engines shall drive stainless steel fixed pitch propellers through the integral gearboxes.

21.2 The Contractor shall be responsible for ensuring the correct installation and setting up of the engines including the choice of propellers so as to avoid ventilation and cavitations.

21.3 The declared (rated) power of an engine model or propulsion system shall be the full throttle power at the declared (rated) speed at the final output shaft of the engine or propulsion system as offered for sale by the manufacturer. The power measurements and declarations for the engines and the propulsion system shall comply with the requirements in accordance with International Council of Marine Industry Associations (ICOMIA) 28/83.

21.4 The emission of the engines shall comply with 3 Stars (Ultra-Low Emission) or higher required by California Air Research Board (CARB) star system that describes exhaust emissions of both two-stroke and four-stroke outboard engines or equivalent. [E]

21.5 Each of the engines shall be controlled by one set of throttle/forward/reverse lever. The two levers will be conveniently placed for one handed simultaneous operation by the coxswain.

21.6 The Engine Throttle Control Head shall be provided on the right hand side of the steering wheel.

21.7 The engines shall be equipped with power trim. And a switch at the helm that enables the operator to adjust the trim angle on the fly. The engines shall be designed to trim fully in to start, and trimmed out as the boat gains momentum, until it reaches the point just before ventilation begins.

21.8 The engine located at the transom shall be easily accessed for maintenance and routine checking even underway. A working platforms for engine maintenance purpose shall be fitted.

21.9 The electrical cables, pipings for petrol and hydraulic oil run between the console/fuel tanks and the stern shall be suitably designed to ease the maintenance. They shall be properly supported to prevent chafing and unnecessary tension.

21.10 Each engine system shall include the following accessories:

21.10.1 24V or 12V electrical system c/w alternator and remote starting control;
21.10.2 Dead-man switch/emergency cut-off;
21.10.3 Power trim and tilt system with trim gauge at console;
21.10.4 Engine protection system as required by engine manufacturer, with audio and visual warnings at console;
21.10.5 Each engine shall incorporate one alternator for battery charging;
21.10.6 Engine tie bar with each pair of engines.

22 ***Engine Installation***

22.1 The main and auxiliary engines shall be installed in accordance with the engine maker's instructions and requirements. The Contractor shall submit a certificate/report issued by the engine maker showing that the design and workmanship, power output of the engine installation is suitable for the application / service profile of the Vessel and up to his satisfaction.

23 Propellers

23.1 All propellers are to be of stainless steel with fixed pitch. Removable propeller shrouds are to be provided for propellers but not be fitted during the Official Speed Trial.

24 Steering System

24.1 The Vessel shall be fitted with a hydraulic steering system approve by the engine's manufacturer as evidenced by a confirmation to be issued by the engine's manufacturer.
24.2 The hydraulic steering system shall be designed with two hydraulic cylinders operating in parallel. The steering capability must be maintained with one cylinder malfunctioned. If the oil supply to the hydraulic steering system fails or too small, the steering unit shall be able to work in an emergency manual steering mode.
24.3 A redundant system with independent power supply shall be provided to maintain the vessel steering capability in case of main power supply failure.
24.4 The hydraulic oil tank shall be located that ready access is available for level checking.
24.5 Outboard engines shall be designed so that, with any combination of engine turn and tilt, there shall be no damaging interference between the motor, its accessories, and both the craft-mounted and the engine-mounted system.
24.6 Connections, fittings, oil fill openings and air bleeders shall be accessible.
24.7 Components in the system shall be externally protected against corrosion. The complete hydraulic steering system shall be designed to withstand conditions of pressure, vibration, shock and movement without failure or leakage.
24.8 Hydraulic systems shall be capable of operation throughout an ambient temperature range of -10^{O}C to +60 ^{O}C and be capable of withstanding storage at -30 ^{O}C to +60 ^{O}C.
24.9 Materials used in hydraulic steering systems shall be resistant to deterioration by liquids or compounds with which the material may come in contact under normal marine service, e.g. grease, lubricating oil, hydraulic fluid, common bilge solvents, salt and fresh water.
24.10 The type of hydraulic fluid to be used in a hydraulic steering system shall be specified by the manufacturer of the steering system and shall be stated in the owner's manual. The hydraulic fluid shall be non-flammable or have a flash point of 157^{O}C or over.
24.11 Hydraulic lines shall be supported by clips, straps or other means to prevent chafing or vibration damage. The clips, straps or other devices shall be corrosion resistant and shall be designed to prevent cutting, abrading or damage to the lines and shall be compatible with hydraulic line materials.
24.12 A flexible section shall be installed between rigid piping and cylinder(s).
24.13 The steering wheel is to be fitted with an anti-slip covering.
24.14 The piping shall comply with one of the international standards as stated in Clause 2.1.6 to this Part.
All the fittings (hoses and piping) shall withstand the system test pressure without leaks.

25 Fuel System and fuel oil Tank

25.1 Fuel System

25.1.1 Individual components of the system, and the system as a whole, shall be designed to withstand the combined conditions of pressure, vibration, shocks, corrosion and movement encountered under normal operating conditions and storage.

25.1.2 Each component of the system, and the system as a whole, shall be capable of operation within

an ambient temperature range of -10^{O}C to +82 ^{O}C, without failure or leakage, and be capable of being stored without operation within an ambient temperature range of -30^{O}C to +80^{O}C, without failure or leakage.

25.1.3 All materials used in fuel systems shall be resistant to deterioration by its designated fuel and to other liquids or compounds with which it may come into contact under normal operating conditions, e.g. grease, lubricating oil, bilge solvents and sea water.

25.1.4 No electrical component/device/cable shall run through or installed inside the petrol tank compartment, otherwise, the electrical component/device/cable located in compartment shall be ignition protected so that

25.1.4.1 It will not ignite a flammable hydrocarbon mixture surrounding the device when an ignition source causes an internal explosion, or

25.1.4.2 It is incapable of releasing sufficient electrical or thermal energy to ignite a hydrocarbon mixture, or

25.1.4.3 The source of ignition is hermetically sealed.

25.1.5 The only outlets for drawing fuel from the fuel system shall be the plugs in petrol filter bowls intended solely for the purpose of servicing the filter;

25.1.6 In any fuel filling system each metal or metal-plated component which may come into contact with fuel shall be grounded to earth with a maximum resistance of 1 Ω.

25.1.7 Grounding wires shall not be clamped between a hose and its pipe or spud.

25.1.8 Fuel filling systems shall be designed to avoid blowback of fuel through the fill fitting when filling at a rate of 30 litres/min at between 1/4 and 3/4 full of the tank capacity.

25.2 Petrol Tank

25.2.1 One stainless steel petrol tank shall be mounted at under deck position. The tank shall not be integral with the hull and shall be installed so that the loads due to the mass of the full tank are safely induced into the structure, with due consideration given to upward and downward acceleration due to the vessel's movements at maximum speed in the sea. In this respect, continuous flexible supports spreading loads are preferable to rigid ones. The design and tests shall comply with the requirements of Recognised Organisation or other international standards acceptable to MD.

25.2.2 Except the electric wires for the fuel oil tank level sensor(s), no other should pass through any fuel tank compartment(s). Ventilation for the fuel tank compartment(s) shall comply with national or other acceptable industrial standards.

25.2.3 The total capacity of the tank shall be not less than 700 litres. The unpumpable capacity of the each tank shall not be more than 10% of the capacity of that tank. It is preferable to have both of the tanks containing the same capacity of petrol.

25.2.4 All seals such as gaskets, O-rings and joint-rings shall be of non-wicking, i.e. non-fuel absorbent, material. All materials used shall be resistant to deterioration by the fuel for which the system is designed and to other liquids or compounds with which the material can come in contact as installed under normal operating conditions, e.g. grease, lubricating oil, bilge solvents and sea water.

25.2.5 Internal surfaces of the petrol tank shall be left unpainted and the petrol tank internal shall be cleaned thoroughly to the satisfaction of MD.

25.2.6 Provisions to the Petrol Tanks

25.2.6.1 A tank content gauge and low level alarm shall be fitted on the control console for each tank. A sounding rod calibrated in litres shall be supplied for each tank;

25.2.6.2 Marine grade stainless steel 316 with increased resistance to corrosion shall be used. The thickness shall sustain the loads due to the mass of the full tank with due consideration given to upward and downward acceleration due to the vessel's movements at maximum speed in the sea without damaging the integrity of the tanks;

25.2.6.3 The fuel tanks shall have all fittings and openings on top, except metallic fill and ventilation pipes, which may be connected to the sides or ends of metal petrol fuel tanks, provided that they are welded to the tank and reach above the top of the tank.

25.2.6.4 Rigid fuel suction tubes and fill pipes which extend near the tank bottom shall have sufficient clearance to prevent contact with the bottom during normal operation of the craft;

25.2.6.5 An inspection manhole, air vent with flame trap on deck and discharge valve with remote operated quick closing device shall be provided;

25.2.6.6 The tanks support, chocks or hangers shall either be separated from the surface of metal tanks by non-metallic, non-hygroscopic, non-abrasive material or welded to the tank;
25.2.6.7 An easily removable coarse strainer shall be built into the filling line;
25.2.6.8 Baffles shall be provided, the total open area provided in the baffles shall be not greater than 30% of the tank cross section in the plane of the baffle;
25.2.6.9 Baffle openings shall be designed so that they do not prevent the fuel flow across the bottom or trap vapour across the top of the tank;
25.2.6.10 The tanks shall be designed or installed so that no exterior surface will trap water;
25.2.6.11 Tank drains are not permitted on petrol fuel tanks.

25.3 Diesel Tank

25.3.1 One marine grade stainless steel 316 diseel tanks shall be mounted at under deck position. The tanks shall not be integral with the hull and shall be installed so that the loads due to the mass of the full tank are safely induced into the structure, with due consideration given to upward and downward acceleration due to the vessel's movements at maximum speed in the sea. In this respect, continuous flexible supports spreading loads are preferable to rigid ones. The design and tests shall comply with the requirements of Recognised Organisation or other international standards acceptable to MD.
25.3.2 Except the electric wires for the fuel oil tank level sensor(s), no other should pass through any fuel tank compartment(s). Ventilation for the fuel tank compartment(s) shall comply with national or other acceptable industrial standards.
25.3.3 The total capacity of the tank shall be provide fuel supplied to electrical generator maintain full load operation for 72 hours. The unpumpable capacity of the each tank shall not be more than 10% of the capacity of that tank. It is preferable to have both of the tanks containing the same capacity of petrol.
25.3.4 All seals such as gaskets, O-rings and joint-rings shall be of non-wicking, i.e. non-fuel absorbent, material. All materials used shall be resistant to deterioration by the fuel for which the system is designed and to other liquids or compounds with which the material can come in contact as installed under normal operating conditions, e.g. grease, lubricating oil, bilge solvents and sea water.
25.3.5 Internal surfaces of the diesel tank shall be left unpainted and the diesel tank internal shall be cleaned thoroughly to the satisfaction of MD.
25.3.6 Provisions to the Diesel Tanks
25.3.6.1 A tank content gauge and low level alarm shall be fitted on the control console for each tank. A sounding rod calibrated in litres shall be supplied for each tank;
25.3.6.2 Marine grade stainless steel 316 with increased resistance to corrosion shall be used. The thickness shall sustain the loads due to the mass of the full tank with due consideration given to upward and downward acceleration due to the vessel's movements at maximum speed in the sea without damaging the integrity of the tanks;
25.3.6.3 The fuel tank shall have all fittings and openings on top, except metallic fill and ventilation pipes, which may be connected to the sides or ends of metal petrol fuel tanks, provided that they are welded to the tank and reach above the top of the tank.
25.3.6.4 Rigid fuel suction tubes and fill pipes which extend near the tank bottom shall have sufficient clearance to prevent contact with the bottom during normal operation of the craft;
25.3.6.5 An inspection manhole, air vent with flame trap on deck and discharge valve with remote operated quick closing device shall be provided;
25.3.6.6 The tank support, chocks or hangers shall either be separated from the surface of metal tanks by non-metallic, non-hygroscopic, non-abrasive material or welded to the tank;
25.3.6.7 An easily removable coarse strainer shall be built into the filling line;
25.3.6.8 Baffles shall be provided, the total open area provided in the baffles shall be not greater than 30% of the tank cross section in the plane of the baffle;
25.3.6.9 Baffle openings shall be designed so that they do not prevent the fuel flow across the bottom or trap vapour across the top of the tank;
25.3.6.10 The tank shall be designed or installed so that no exterior surface will trap water;
25.3.6.11 Tank drains are not permitted on diesel fuel tank.

25.4 Fuel oil Tank Tests

25.4.1.1 Leakage Test
The tank shall be internally tested with a hydraulic pressure with all its accessories. The test pressure shall be the greatest of 20 kPa; 1.5 times the highest hydrostatic

pressure to which the tank may be subjected in service (maximum fill-up height above tank top). The static test pressure shall be applied for 5 min without pressure drop or rise. After the test, the test fuel tank shall not show any leakage when using a leak detection method other than the pressure-drop method.

25.4.1.2 Pressure Type Test and Pressure-Impulse Type Test
A pressure test and pressure-impulse test from representative of the tank series type. A type approval certificates shall be submitted.

26 Freshwater System

26.1 The capacity of the stainless steel SS 316 freshwater tank shall not be less than 100 litres. The freshwater tank shall be an independent tank fitted with the following:
(a) Inspection / cleaning access cover;
(b) Filling / sounding pipe; and
(c) Air pipe.

26.2 The freshwater tank shall not be directly adjacent to any other tanks. The tank shall be hydraulically tested to the Classification Society's rule requirements. One sounding tape or rod calibrated in litres shall be supplied. A contents gauge for the tank shall be fitted in the wheelhouse.

26.3 Domestic freshwater piping shall be of copper where exposed. Precaution must be taken to avoid galvanic corrosion to the system and adjoining material, and avoid the use of health affected material.

26.4 Cold freshwater taps completed with PVC braided / reinforced transparent hoses shall be fitted on the main deck aft and wheelhouse top for cleansing purposes.

26.5 The pressurised unit shall include a starter, pressure switch, pressure gauge, relief valve and suction valves together with a sight level gauge mounted on the pressurised tank. The freshwater pump shall cut-in and cut-out automatically depending on the unit's water pressure. A long-run alarm for the pump shall be fitted at the wheelhouse. The relief valve setting (if fitted) and the pressure testing of the freshwater tank shall be conducted in the presence of a GNC officer.

26.6 Detailed specifications of the pressurised unit including manufacturers' catalogue shall be submitted for MD approval.

27. Generator Set

27.1 One 220V AC single phase marine diesel driven generating set of proprietory make with sound shield shall be installed underdeck. Detection system for fire or gas in generator compartment is to be provided.

27.2 The output power of the generator set shall be sufficient to meet ship's loading requirement for air-conditioning plus 20% reserve margin.

27.3 The generator set shall be DC battery started, attenuator to be drip-proof construction, and its starting/stopping and on-loading shall be by manual means.

27.4 Normal shore supply voltages on the Vessel are 220V for essential electric apparatus. One 220V single phase power supply to the electric equipment from the distribution board shall be through circuit breakers. The distribution system for 220V AC shall be 2 wires insulated.

28. Air-conditioning System

28.1 Air-conditioning with adequate back up ventilation shall be provided for the wheelhouse compartment to maintain comfort when operating in heavy spray and in a high temperature, high humidity summer.

28.2 The air-conditioned space temperature shall be 24°C (dry bulb) for 50% relative humidity when the ambient air temperature is 33°C (dry bulb) at 85% relative humidity with full complement onboard.

28.3 The air-conditioner shall be of a proprietary make with local control in wheelhouse.

28.4 The refrigerant shall be CFC and HCFC free.

28.5 Remote emergency stop buttons in the wheelhouse shall be provided to stop the air-conditioning units in an emergency.

29. Requirements for Electrical System

29.1 ***General Requirements***

29.1.1 Any electrical installation shall conform to IEEE or other standard and rule acceptable by MD.

29.1.2 The system type shall be insulated two-wire Direct Current (DC) system. The hull shall not be used as a current-carrying conductor.

29.1.3 Protective devices such as circuit-breakers or fuses shall be provided at the source of power, e.g. the switchboard, to interrupt any overload current in the circuit conductors before heat can damage the

conductor insulation, connections or wiring-system terminals.

29.1.4 All DC equipment shall function over a voltage range at the battery terminals as follows: 12 volt system: 10.5 V to 15.5 V, 24 volt system: 21 V to 31 V

29.1.5 The length and cross-sectional area of conductors in each circuit shall be such that the calculated voltage drop shall not exceed 10 % of the nominal battery voltage for any appliance, when every appliance in the circuit is switched on at full load.

29.1.6 Switches and controls shall be marked to indicate their use, unless the purpose of the switch is obvious and its mistaken operation will not cause a hazardous condition. Each cable shall be clearly labelled and carries its own unique identification code.

29.1.7 The accommodation area requires 220V AC power sockets only for the portable apparatus and the domestic equipment, etc. A system of 220V AC and 24V DC power sockets shall also be available on the fore and aft ends of the Vessel on the weather deck and in the fore peak of the Vessel.

29.1.8 Each socket outlet shall be integrated with an 'On/Off' switch to facilitate local switching of the electrical equipment. The 220V AC socket outlets shall be supplied with 13A 3-square-pin fused plugs. The 24V DC socket outlets shall be supplied with fused plugs.

29.1.9 The Contractor shall submit a layout plan showing the exact locations of the Equipment. All Equipment shall be accessed easily and safely for inspection and maintenance.

29.1.10 Essential drawings and detailed particulars (such as the rating and capacity, type of all electrical Equipment as well as the wiring, circuit breakers, lighting and sockets, etc.) shall be submitted for MD approval before the Completion Date stipulated in Annex 5 to this part.

29.1.11 Detailed wiring diagrams of the complete supply and distribution network, including wire size, insulation and sheathing shall be submitted for MD approval before the Completion Date stipulated in Annex 5 to this part.

29.1.12 All Equipment installed shall be provided with manuals for operation and maintenance.

29.1.13 The standard of installation shall enhance the Equipment's safety features of not presenting any hazards to the operator, e.g. all metal panels exposed to the operator shall be grounded properly. Warnings of any potential hazards shall be displayed in both English and Chinese, or with universally recognised labels.

29.2 Batteries

29.2.1 Two groups of 12/24 volt maintenance-free batteries, one for outboard engine starting and the other for shipboard services shall be provided. These two groups of batteries shall be connected to two independent DC circuits with a crossover network. They shall be interchangeable to back up each other, and be capable of being charged by the engine-driven alternator individually.

29.2.2 The capacities of these batteries shall be sufficient to provide at least 6 consecutive starts of the engines from cold without recharging and maintain an uninterrupted power supply to the shipboard services (e.g. navigational lights, general lights, alarm, etc.).

29.2.3 The engine-driven alternators shall be able to charge the batteries and to provide 12/24V DC power to the shipboard services.

29.2.4 Batteries shall be permanently installed in a dry, ventilated location above the anticipated bilge-water level.

29.2.5 Batteries shall be installed in a manner to restrict their movement horizontally and vertically considering the intended use of the Vessel. A battery, as installed, shall not move more than 10 mm in any direction when exposed to a force corresponding to twice the battery weight.

29.2.6 Batteries shall be installed, designed or protected so that metallic objects cannot come into unintentional contact with any battery terminal.

29.2.7 Batteries, as installed, shall be protected against mechanical damage at their location or within their enclosure.

29.2.8 Batteries shall not be installed directly above or below a fuel tank or fuel filter.

29.2.9 Any metallic component of the fuel system within 300 mm above the battery top, as installed, shall be electrically insulated.

29.2.10 Battery cable terminals shall not depend on spring tension for mechanical connection to them.

29.2.11 A battery-disconnect switch shall be installed in the positive conductor from the battery, or group of batteries, connected to the supply system voltage in a readily accessible location, as close as practical to the battery or group of batteries except the circuits for engine starting and navigation lighting and electronic devices with protected memory and protective devices such as bilge-pumps and

alarms, if individually protected by a circuit-breaker or fuse as close as practical to the battery terminal;

29.3 Distribution Network

29.3.1 12/24V DC services shall be supplied from the switchboard in the steering console through a 2-wire insulated system to the following items:

(a) Navigation light control panel and navigation lights.
(b) Horn.
(c) General lighting.
(d) Compass light.
(e) Instrument panel in control console.
(f) Content gauge for petrol tank.
(g) Submersible bilge pump.
(h) One hand-held searchlight and one fixed searchlight.
(i) Siren.
(j) Blue flashing light.
(k) Any other navigational and electronic equipment (if applicable).

29.4 Conductors

29.4.1 Conductor insulation shall be of fire-retardant material, e.g. not supporting combustion in the absence of flame.

29.4.2 Conductors that are not sheathed shall be supported throughout their length in conduits, cable trunking, or trays, or by individual supports at maximum intervals of 300 mm.

29.4.3 Sheathed conductors and battery conductors to the battery disconnect switch shall be supported at maximum intervals of 300 mm, with the first support not more than 1 m from the terminal. Other sheathed conductors shall be supported at maximum intervals of 450 mm.

29.4.4 Sheathed engine starter conductors constitute an exception to this requirement.

29.4.5 Conductors which may be exposed to physical damage shall be protected by sheaths, conduits or other equivalent means. Conductors passing through bulkheads or structural members shall be protected against damage to insulation by chafing.

29.4.6 Conductors shall have minimum dimensions in accordance with IEEE or other equivalent international standard acceptance to MD, or the conductor manufacturer's rated current-carrying capacity, based on the load to be supplied and allowable voltage drop for the load to be carried. Conductors in voltage-critical circuits, such as starter motor circuits and navigation-light circuits, whose output may vary with system voltage, shall be sized in compliance with the component manufacturer's requirements.

29.4.7 Each conductor longer than 200 mm installed separately shall have an area of at least 1 mm2. Each conductor in a multi-conductor sheath shall have an area of at least 0.75 mm^2 and may extend out of the sheath a distance not to exceeding 800 mm.

29.4.8 An exception may be made for conductors of minimum area 0.75 mm^2 which may be used as internal wiring in panel-boards.

29.4.9 Each electrical conductor that is part of the electrical system shall have a means to identify its function in the system, except for conductors integral with engines as supplied by their manufacturers.

29.4.10 Current-carrying conductors shall be routed above anticipated levels of bilge water and in other areas where water may accumulate, or at least 25 mm above the level at which the automatic bilge-pump switch activates.

29.4.11 The metallic sheathing, armour or braid of cable shall be properly earthed at both ends. All bare terminals shall be properly insulated by approved cable insulators.

29.4.12 Wiring shall run along conduits with watertight openings and be secured in such a manner as to allow easy maintenance. Suitable watertight cable glands shall be provided at the openings of watertight compartment or deck penetrations.

29.5 Overcurrent Protection

29.5.1 A manually reset trip-free circuit-breaker, or a fuse, shall be installed within 200 mm of the source of power for each circuit or conductor of the system or, if impractical, each conductor shall be contained within a protective covering, such as a sheathing conduit or cable trunking, for its entire length from the source of power to the circuit- breaker or fuse.

29.5.2 The voltage rating of each fuse or circuit-breaker shall not be less than the nominal circuit voltage; the

current rating shall not exceed the value for the conductor of smallest diameter in the circuit.

29.5.3 Output circuits of self-limiting generators and battery chargers do not require fuses or circuit-breakers.

29.6 Switchboard

29.6.1 Switchboards shall be installed such that the control elements, indicating instruments, circuit-breakers and fuses are readily accessible. The terminal side shall be accessible.

29.6.2 Connections and components on panel-boards shall be in locations protected from the expected conditions in conformity with IEC 60529:

29.6.2.1 IP 67 as a minimum, if exposed to short-term immersion; IP 55 as a minimum, if exposed to splashing water;

29.6.2.2 IP 20 as a minimum, if located in protected locations inside the craft.

29.6.3 Panel-boards (switchboards) shall be permanently marked with the nominal system voltage.

29.6.4 A moulded case circuit breaker for shore connection box shall be provided on the main switchboard. The shore connection box shall be capable of receiving 220V 1-phase 50 Hz current on a 2-wire system and the cables between the connection box and the main switchboard shall be of sufficient capacity to supply the necessary electrical equipment. An earth terminal shall be provided for connection of the Vessel's earth to the shore earth. An instruction sign shall be provided at the connection box to give full information of the system and the procedures for carrying out the connection. In addition, the circuit breaker on the main switchboard shall contain the following fittings.

29.6.4.1 circuit with under-voltage protection and interlocking device to ensure electrical isolation during the change-over;

29.6.4.2 Indication light for "Shore Power Available";

29.6.4.3 Indication light for "Shore Power Breaker Opened"; and

29.6.4.4 Indication light for "Shore Power Breaker Closed".

29.6.5 Shore Power Connection Box

29.6.5.1 Not less than 15 meters long shore connection power cable of adequate rating with quick release watertight plug shall be provided.

29.6.5.2 The connection box must be of watertight design with quick release receptacle for marine application.

29.7 Receptacles/Sockets

29.7.1 Receptacles/sockets installed in locations subject to rain, spray or splashing shall have a minimum protection of IP55, in accordance with IEC60529 when not in use, e.g. protected by a cover with an effective weatherproof seal.

29.8 Lighting

29.8.1 All lightings shall be equipped with LED bulbs including the navigation lights.

29.9 Ignition Protection

29.9.1 Compartments which may contain explosive gases are those containing, or which have open connections with compartments containing, such items as,

29.9.1.1 Fuel tank Compartment;

29.9.1.2 Joints or fittings in fuel lines connecting spark-ignition engines with their fuel tanks.

30 Bilge System

30.1 Vessel shall be designed and constructed so as to prevent the accidental discharge of pollutants (oil, fuel) overboard.

30.2 Electrical bilge pump shall be provided at the stern.

30.3 Manual bilge pump shall be provided at the stern for all separate compartments.

31 Navigational And Signalling Equipment

31.1 Navigation Lights

31.1.1 Navigation lights shall be in compliance with the International Regulations for Preventing Collisions at Sea 1972 (as amended by IMO Resolution A. 464 (XII) and A. 626 (XV)) with certificate by HKMD recognised classifications.

31.1.2 The lights shall be controlled from the control and alarm panel at the control console. Each navigation light circuit shall be provided with a switch, protection fuse, indicating lamp and alarm. Dimmer for the

panel indication lights, buzzer stop and lamp test buttons shall be fitted.

31.1.3 Navigation light circuits shall be independent of any other electrical circuits. There shall be two essentially separate power supply systems to the distribution board.

31.1.4 The following navigation lights shall be provided together with protection system as stated at:

(a) Port side light;
(b) Starboard side light;
(c) Stern light;
(d) Masthead light; and
(e) Anchor light

31.2 The following signalling equipment shall be provided:

31.2.1 One all round red flashing light;
31.2.2 One siren;
31.2.3 COLREG Rule 27e (i) "Three all round lights in vertical Line (Red White Red) ;
31.2.4 Three black ball;
31.2.5 One black diamond; and
31.2.6 One bell (0.2 m. mouth diameter).

31.3 One set of spare navigation light and two sets of light bulb for all light signal shall be provided when delivery.

31.4 The Vessel shall be fitted with a proven lightning protection system to protect the personnel onboard and the electronic equipment installed. Method and working principle of protection shall be submitted for MD approval before the Completion Date stipulated in Annex 6 to this part.

32 Search Lights

32.1 Sockets for one 100W portable search lights shall be installed at the specified location. Also, one flood light at aft of cabin and one fixed search light, adjustable by person within the wheelhouse shall be provided on top of cabin.

33 Life-saving Appliances and Fire-fighting Equipment

33.1 The life-saving appliances and fire-fighting equipment shall comply with IMO Standards. Minimum requirements refer to Local Vessel Ordinance of HKSARG.

33.2 Life-saving Appliances

33.2.1 6 lifejackets and one children lifejacket; and
33.2.2 One lifebuoy with buoyant life line in length of 30m. Two additional lifebuoy shall be supplied for rescue usage.

33.3 Fire-fighting Equipment

33.3.1 Two 4.5-kg dry powder fire extinguisher shall be provided with holding rack;
33.3.2 One 9 litre foam fire extinguisher shall be provided with holding rack; and
33.3.3 One manual fire pump with fire main, hose, hydrant, jet/spray nozzle shall be provided with holding rack including a sea suction cock situated outside the engine room.

33.4 A safety plan shall be provided onboard in wheel house.

34 Markings and Colour Scheme

34.1 Markings and colour scheme for the Vessel shall be provided as per the requirements set out in Annex 11 to this part.

35 Tally Plates

35.1 Builder Plate

A builder's plate shall be fitted. The following information but not limited to, shall be displayed on each builder's plate.

(a) Manufacturer's name; and
(b) Maximum number of persons that the craft is designed to carry while underway.

35.2 Tally plates in both English and Chinese characters shall be fitted for spaces and equipment at the following locations:

35.2.1 Equipment in the console;
35.2.2 Electrical and communication equipment;
35.2.3 Air vents and filling pipes for the petrol tank;
35.2.4 All valves;
35.2.5 Control panels, switchboards, distribution boxes and electrical circuits;
35.2.6 Any other equipment/fittings as required;

35.2.7 Information engraved on tally plates shall include:
(a) source of power, fuse rating, voltage and warning; and
(b) Any other information as required.

35.3 Tally plates exposed to weather shall be made of durable and non-corrosive material and be securely fastened.

35.4 A tally plate specifying the maximum number of crew and passengers to be carried on board shall be displayed at a prominent position on the main deck.

35.5 All cable termination shall be clearly identified for disconnection and reconnection.

36 Requirements of Electronic Navigation Equipment (ENE)

36.1 Description of Electronic Navigation Equipment (or alternatively referred to as communication and navigation equipment or "ENE")

36.1.1 In addition to the obligations of the Contractor as specified in this Part in relation to other Equipment and fitting as specified in this Part, the Contractor is required to supply and is responsible for the supply, delivery, testing, installation, commissioning and warranty (12 months) and provision of operational and maintenance service manual and training of the following electronic navigation equipment to be fitted on board the vessel for Marine Department (MD):

(a) Echo Sounder and Depth indicator

(b) Marine Daylight Viewing Colour Radar with Differential Global Positioning System and Electronic Chart System

(c) Magnetic Compass and Fluxgate Compass

(d) International Maritime Mobile (IMM) VHF Radio with Global Maritime Distress Safety System (GMDSS)

(e) Loudhailer and Siren System with USB player

(f) Automatic Identification System (AIS) Receiver

(g) Radar Reflector

The Contractor shall provide all labour, material, transportation, installation calibration, testing and commissioning, maintenance and support services in Warranty Period (with the scope as specified in Annex 1 to this Part) and test equipment etc. which are necessary to complete the work required in this chapter.

36.1.2 An integrated system is required, so that information and also the display monitors of different systems, such as radar system, compass, could be shared in order to utilize the limited space available in coxswain operation area and to provide users a better displaying interface. The Contractor shall refer to Appendix A in this chapter for the conceptual block diagram of electronic equipment for this vessel.

36.1.3 All equipment offered shall be designed for marine applications and shall allow effective operation under most arduous condition i.e. severe vibration, poor weather, strong winds and heavy rains etc. Exposed components shall be of weather proof and adequate protection against splash and water shall be provided for all electronic equipment fitted on board.

36.1.4 All components of the equipment exposed to the weather shall be sea water resistance. Internal components shall be fully enclosed with heavy duty seals and sufficient heat dissipation mechanism (e.g. ventilation, conduction, etc.) to protect the equipment.

36.1.5 The Contractor shall pay attention to the Compass Safe Distance of the equipment and the Radiation Hazard Zone of the radar scanner in the vessel design.

36.1.6 All radar and radio equipment shall be type approved by the Office of Communication Authority of Hong Kong.

36.1.7 All sitting, installation and cabling in respect of compass, VHF, radar etc. shall comply with the relevant rules and regulations of HKSAR.

36.1.8 When the generation / use of calendars are employed for logging of reports, activation off equipment, or as any essential part of logic for the proper functioning of the system, then the calendar generation shall function without any error or manual intervention for all leap years.

36.1.9 The circuit breaker for the electronic equipment shall equip with lockout device so that the breaker can be locked during the equipment maintenance.

36.1.10 Lightning protection shall be provided and installed wherever applicable. The lightning arresters for all outdoor antennas shall be installed at the antenna ends.

36.1.11 Equipment supplied shall complete with all standards and/or maker recommended accessories as required for normal operation.

36.2 Echo sounder and Depth Indicator

36.2.1 The equipment shall consist of a transducer and a digital depth indicator which is recessed mounted at the steering console and capable of providing readout of sea depth in feet, fathoms and meters.

36.2.2 The measuring depth shall be from 3 feet to 250 feet or equivalent in fathom or metre with at least 3 selectable ranges to indicate shallow, mid and deep ranges. The unit of measurement shall be selected at the front panel of the equipment.

36.2.3 Shallow water audible alarms shall be provided. Setting of the alarm depth shall be at the front panel of the equipment.

36.2.4 The electronic accuracy of depth reading shall be better than + 5% of full scale range.

36.2.5 The peak to peak transmitting pulse power of the transducer shall not be less than 200 watts and the nominal operating frequency shall be 200 kHz.

36.2.6 There shall be an isolating switch to switch off the recorder in case of shortage of recording paper but the equipment for sensing and indicating the depth shall be still operating and functioning as in normal working condition.

36.3 Marine Radar

36.3.1 General Requirements

36.3.1.1 The equipment shall be a relative motion high performance radar suitable for small vessels and comprises a transceiver, an antenna and a colour display unit, suitable for bright daylight and night viewing.

36.3.1.2 The transceiver shall be housed in the scanner unit and shall be designed for aloft mounted construction and capable of satisfactory operation at high wind speeds. The scanner assembly shall be housed in a weatherproof housing.

36.3.1.3 The radar scanner unit shall be installed well clear of obstruction to minimise undue interference and Non-Ionizing Radiation (NIR hazards). Care shall also be taken to ensure the scanner mounting does not give excessive shadow sectors for navigation lights.

36.3.1.4 Complete interface kit shall be provided to interface the radar for the Fluxgate Compass and GPS/DGPS. The radar shall have interface to accept and display navigation data such as latitude and longitude positions of the vessel given by the GPS/DGPS receiver.

36.3.1.5 The Contractor shall pay special attention to any possible radar blind zone, and address this during the design stage and verify it after installation, and rectify it if required. Special attention shall be paid to the equipment installed before the radar scanner like flood lights and/or horn speakers. Care shall also be taken to ensure the mounting does not obstruct the navigation lights.

36.3.1.6 The radar shall have standard NMEA 0183 interface ports, i.e. National Marine Electronics Association (NMEA) Standard, capable of accepting navigational data from a wide selection of GPS/DGPS Receivers, Electronic Compasses, and to output comprehensive data on all tracked targets in the form of a track table to a wide selection of electronic chart plotters. However, connection of the radar system to the other systems supplied under this Contract via other standard interface types equivalent to NMEA 0183 is acceptable.

36.3.1.7 The power of the equipment shall be supplied from the D.C. 24V system of the vessel.

36.3.1.8 The radar transceiver shall be housed in a radome antenna/scanner unit of maritime type. It shall be designed for aloft mounted construction and capable of satisfactory operation at relative wind speeds of not less than 70 knots.

36.3.1.9 Guard zones and alarm functions shall be provided in the radar. The zone can be set and shown on the display screen. Audible alarm shall be activated if other vessels enter the zones set.

36.3.1.10 The display unit shall be of table top mounting type providing clear and clutter free picture in all weather conditions and suitable for bright daylight and night viewing. It shall indicate clearly the important parameters such as radar targets, range marker, bearing line, heading marker, range rings, guard zone and background etc.

36.3.1.11 On the viewing side of the display unit, the following controls shall be provided:

(a) Power ON/OFF
(b) Standby/Transmit
(c) Automatic adjustment of gain, sea clutter and tune keeps targets clearly in view
(d) True motion display the vessel's movements relative to fixed targets
(e) Bearing cursor rotation
(f) Variable range marker
(g) Range scale selection
(h) Display brilliance & illumination
(i) Selection of background colour and target colour
(j) Tuning
(k) Heading marker ON/OFF

36.3.1 Performance Requirements

The marine radar shall perform at least the following requirements.

36.3.1.1 Display Unit

(a)	Display	Flat panel colour LCD
(b)	Screen size	12 inch or larger
(c)	Resolution	640 x 480 pixels or better
(d)	Display mode	Head up, Course up, North up and True Bearing Modes (with inputs of compass and speed data)
(e)	Range scale	0.125 nm to 36nm
(f)	Range units	Selectable from nautical miles, kilometres, and kilo yards
(g)	Minimum range	30 m or better
(h)	Range ring accuracy	1.5% or better of the maximum range of the scale in use;or 30m, whichever is the greater
(i)	Radar bearing accuracy	1.5 degree or better
(j)	Display language	English and desirably with Chinese
(k)	Others	With Adjustable electronic bearing lines and variable range markers features
(l)	Operating temperature	-15oC to +55oC or better
(m)	Relative humidity	90% or better

36.3.1.2 Transceiver

(a)	Operating frequency	9410±30 MHz (X–band)
(b)	Peak power output	at least 4 KW
(c)	Pulse length	equipped with long, medium and short pulse modes for close, medium and long range operation
(d)	Overall noise figure	6 dB or Better

36.3.1.3 Antenna

(a)	Operating frequency	9410±30 MHz (X–band)
(b)	Aerial Type	Radome radar antenna (24" or less)
(c)	Horizontal beam width	2.0 degrees or less
(d)	Vertical Beam width	24.0 degrees or less
(e)	Sidelobes	Attenuated more than -23 dB within+10 the degrees of main beam and better than -30 dB outside +10 degrees of the main beam
(f)	Polarization	Horizontal
(g)	Rotation Speed	Not less than 24 rpm within satisfactory operation at relative wind speed up to 70 knots. Manual and automatic selection of antenna rotation speed (for example, 24rpm, 36rpm/48rpm) shall be available according to detection range.
(h)	Operating temperature	-15^{o}C to +55^{o}C or better
(i)	Relative humidity	90% or better

36.3.1.4 Heading Marker, Bearing Measurement and Display

(a) This thickness of heading marker shall not be greater than 0.5 degree with an accuracy better than 1 degree.

(b) Arrangements shall be provided for bearing measurement with an accuracy of better than 1.5 degree. Bearing discrimination shall be better than 2.0 degrees.

36.3.1.5 ARPA (Automatic Radar Plotting Aid) Requirement

(a)	Target Acquisition	10 targets or better (manual)
(b)	Tracking	Automatic
(c)	ARPA Range Scales	From 0.75 to 12 nautical miles or better
(d)	Readout of Selected Target	Range, bearing, course, speed, CPA (Closest Point of Approach), TCPA (Time to Closest Point of Approach)
(d)	Target Vector	Relative, true
(e)	Intercept Mode	Automatically calculate intercept course and Time to Go (TTG) to tracked target

36.3.2 The crew operator shall be able to select the following modes of presentation at the radar display:
(a) radar image only
(b) plotter image only
(c) plotter image overlaid with radar image

36.4 DGPS receiver

36.4.1 General requirements

36.4.1.1 The information received by the GPS/DGPS receiver shall be input to the marine radar and display on the marine radar and the screen of the Electronic Chart System (ECS). The output of the receiver shall give the vessel position in a format compatible to marine radar in the NMEA 0183 format. However, connection of the radar system to the other systems supplied under this Contract via other standard interface types equivalent to NMEA 0183 is acceptable.

36.4.1.2 The system shall be provided with "speed logs and electronic compass interface" or "gyro and its interface" to support the "dead reckoning" mode operation, if GPS satellite signal is absent for a period greater than 10 minutes.

36.4.1.3 Capable of input not less than 20 routes of 100 waypoints with 20 character alphanumeric names and icons.

36.4.1.4 Language to be used is English and desirably with Chinese.

36.4.2 Performance requirements

36.4.2.1 Display

(a) Display unit: True sunlight readable 640 x 480 pixel (or better) back-lit LCD Display
(b) NAV data, 3-D panorama display
(c) Position indication: Latitude/ Longitude, UTM
(d) Position resolution: 4 decimal places

36.4.2.2 GPS Receiver

(a)	GPS Receiver Type	Equipped with 8 channel parallel receiver or better
(b)	Frequency Range	1575.42±1MHz (C/A code), L1
(c)	Sensitivity	-130 dBm or better
(d)	Dynamic Range	25 dB or better
(e)	Warm start fix time	Less than 30 seconds
(f)	Cold start fix time	Less than 3 minutes
(g)	Position Accuracy	15m or better
(h)	Tracking Velocity	999 kt or better

36.4.2.3 Differential Beacon Receiver

(a)	Frequency range	283.5-325 kHz
(b)	Frequency Step	500 Hz
(c)	Position Accuracy	5m or better

36.4.2.4 Environmental requirements

(a) Temperature: Operating temperature -15 to 55
(b) Water resistance splash proof

36.5 Electronic Chart System (ECS)

36.5.1 General requirements

36.5.1.1 A PC which can display Electronic Navigational Chart (ENC) data compiled under "International Hydrographic Organization (IHO) Transfer Standard for Digital Hydrographic Data Standard (Version 3.1). An ENC software – Orac Master G2 must be installed in the PC. DGPS receiver transmit the NMEA data to the PC by connecting DGPS and PC through communication port e.g COM Ports. USB..etc.

36.5.1.2 A display unit of size not less than 430mm diagonal high resolution colour LCD.

36.5.1.3 A keyboard and a mouse capable of input data and operate the ENC.

36.5.1.4 Capable of display chart, track, waypoints and navigation data.

36.5.2 Specific requirements

36.5.2.1 PC with the following requirements

(a)	Operating system	Window 7 Professional (Chinese) or above
(b)	CPU	Intel Core i5 or better
(c)	RAM	4 GB
(d)	Display card	Up to 1920 x 1080 HDMI, DVI interface
(e)	DVDROM	30x
(f)	HDD	SSD
(g)	HD	128GB or above
(h)	Software	Microsoft Office 2013 Standard (Traditional Chinese)
(i)	Printer	Multi-Functional Laser Printer (Copy, Print and copy) which connect to PC through USB, the print & copy speed at least 20 pages per minutes and support auto double-sides printing, copying and scanning.

36.5.2.2 ECS software

(a) An ECS software-Orac Master G2 must be installed in the PC running Windows Operating System 7 Professional or above.

(b) ENC format: Capable of reading and loading ENC data files in IHO S-57 standard and updatung the files where necessary.

(c) GPS signals: Capable of working with standard GPS/DGPS receiver (NMEA 0183 format)

(d) Navigation functions: Capable of displaying normal navigational functions for distance/bearing calculations and route planning.

(e) Audio alarm: Capable of having voice output of anti-ground and anti-collision warnings

(f) Chart loading: Automatic loading of charts depending on own vessel's position and display scale

(g) Head up mode: Capable of showing both north up and head up mode

(h) Safety display: Capable of adjusting chart colour to the safety depth

(i) Intuitive user interface: Built-in ship handling simulator

(j) Additional chart region: Capable of inputting additional chart regions

(k) Measurement: Capable of measuring bearing and range

(l) Scale range: 0.125nm to 128nm

36.6 Magnetic Compass and Fluxgate Compass

36.6.1 The Contractor shall provide one magnetic compass and also one fluxgate compass with digital display.

36.6.2 The fluxgate compass shall consist of at least a sensor unit and a display unit, and be compact and easy to operate. It shall have direct connection to the radar.

36.6.3 An electronic display unit shall be installed at a position for easy viewing of vessel heading by the coxswain. Digital display is preferred.

36.6.4 The fluxgate compass shall be electronic design which GPS/DGPS will not cause deviation.

36.6.5 The fluxgate compass shall be provided to allow the operation of the radar in north stabilized mode and supply heading direction information to colour plotter system.

36.6.6 Performance Requirements of fluxgate compass:

(a) Reference : Either Magnetic North or True North

(b)	Accuracy	:	$\pm 1.0^{o}$ typical or better
(c)	Resolution	:	0.1^{o} or better
(d)	Deviation Compensation	:	Automatic
(e)	Operating Temperatures	:	0℃ to 50℃
(f)	Waterproofing	:	IPX5

36.7 International Maritime Mobile (IMM) VHF Radio with GMDSS

36.7.1 General Requirements

36.7.1.1 The IMM VHF radio shall be a type approved make by The Office of Communication Authority of Hong Kong.

36.7.1.2 The Radio shall be fully compatible to Global Maritime Distress Safety System (GMDSS) and equipped with a lithium battery of lifetime at least 5 years.

36.7.1.3 The Radio shall be fully compatible to Global Maritime Distress Safety System (GMDSS), which is a class A Digital Selective Calling (DSC) transceiver fully compatible with the International Maritime Organization (IMO) GMDSS carriage requirements.

36.7.1.4 The equipment shall be equipped with all the entire international maritime VHF channels complete with a fist microphone with press-to-talk switch or telephone handset, mic/handset hanger, mounting bracket and loud speaker.

36.7.1.5 The equipment shall incorporate with Channel 12 and shall be able to dual watch on Channel 16 or one of the other channels.

36.7.1.6 The equipment shall complete with antenna and integrated microphone, loudspeaker, control knobs/keys, display screen, etc., necessary for a stand-alone portable radio.

36.7.1.7 The equipment shall complete with antenna and battery. The operating temperature shall be 0 ^{o}C to +55 ^{o}C. The water ingress protection shall be IPX5 or better.

36.7.1.8 The radio supplied shall complete with antenna and re-chargeable battery, 220 Vac battery charger (for battery charging on shore) and one extra set of spare re-chargeable battery. The Contractor shall provide proper stowing space and facilities for keeping of the Portable Radio and the spare battery such that the crew can take the Portable Radio out for use when necessary.

36.7.1.9 The equipment shall be supplied with a belt clip and a shoulder carrying case.

36.7.1.10 The Contractor shall also supply a DC battery charger (one for each vessel extra to the 220 Vac battery charger) which can be readily and directly connected to a DC power outlet at each vessel such that the Portable Radio can be charged on the vessel if necessary. The DC battery charger will normally be not in use and be stowed on the vessel with stowing space and facilities provided by the Contractor.

36.7.1.11 The following facilities shall be provided at the front panel of the equipment:-

(a) Power ON/OFF
(b) Transmit" indicator, volume and squelch controls.
(c) Socket for plug for microphone and external speaker
(d) Quick selection of Channel 16
(e) Channel selection and indicator
(f) Dual watch mode selection
(g) Transmission power selector for HIGH and LOW Power (25 W/ 1 W)

36.7.1.12 Performance Requirements

i) Transmitter Characteristics

(a) Spurious and harmonics emissions	-70 dB or better
(b) RF Output Power	26W / 1 W (High / Low)

ii) Receiver Characteristics

(a) Sensitivity	Less than 1 uV for 20 dB SINAD or equivalent

(b)	Adjacent Channel Selectivity	60 dB or better
(c)	Spurious Image Rejection	65 dB or better
(d)	Intermodulation	65 dB or better
(e)	Audio output	Not less than 1 Watt at rated audio power output with less than 10% distortion

iii) Aerial and Feeder

(a) The aerial provided shall be marine type aerial with at least 3 dBi gain, vertically polarized, omni-directional and suitable for mounting on the launch.

(b) The V.S.W.R. of the aerial installed shall be less than 1.5 : 1

(c) The aerial feeder shall be RG58U type or equivalent.

(d) Coaxial cable lightning suppresser with appropriate earthing connection shall be provided for protecting the radio equipment. All outdoor connector joint should be properly covered by waterproof tape or material.

36.8 Loudhailer / Siren with USB player

36.8.1 The system shall function as a loudhailer/siren system for external broadcast specially designed for maritime purposes.

36.8.2 Loudhailer/Siren

36.8.2.1 The system shall comprise a master control unit in wheelhouse and two weather proof horn type loudspeakers, in conformance to IPX5 or better, located at forward and aftward of the vessel respectively.

36.8.2.2 It shall have the capacity to generate a "Yelp" siren and a horn signal sound in manual mode. It shall also has a selection of at least 6 warning signal sounds in automatic mode for general marine navigational uses, namely Underway, Stopped, Sail, Tow, Anchored, and Aground.

36.8.2.3 There shall be a volume control on external broadcasting speakers so they shall be adjustable to full power for messages to be heard 0.5 km away and down to minimum for night operations.

36.8.2.4 The master control unit, which shall be completed with fist microphone and microphone hanger, shall be recessed mounted in the wheelhouse with the following facilities provided at the front panel:

(a) Power ON/OFF

(b) Hail volume control

(c) Function control

36.8.2.5 Speech shall be delivered through a fist microphone hanging on the console. The fist microphone shall be water-proof.

36.8.2.6 The output power of the amplifier shall not be less than 30 watts and have the following characteristics:

(a)	Hail sensitivity	Better than 30 mV for 30 watts output at 1 kHz.
(b)	Hail distortion	Better than 10% at 30 watts output at 1 kHz

36.8.2.7 The horn type loudspeaker shall be weatherproof reflex type, 8 ohms impedance with power rating not less than 30 watts (actual rating shall match with the amplifier).

36.8.3 The positions of the master control unit of loudhailer/siren system, control panel shall be finalised in the detailed design stage.

36.8.4 The system shall support playback of audio files stored at USB storage devices. User friendly interface shall be provided to select, start, stop or pause the audio playback.

36.9 Automatic Identification System (AIS) Receiver

36.9.1 General Requirements

(a) The equipment shall receive navigation information from local AIS-equipped vessels.

(b) The equipment shall be a AIS receiver which is able to receive both Class-A and Class-B AIS information.

(c) The AIS receiver shall be able to receive AIS information to and from AIS-equipped vessel nearby such as dynamic data (vessel position, coordinated universal time (UTC), course over ground (COG), speed over ground (SOG), rate of turn (ROT), heading), static data (maritime mobile service identity (MMSI), vessel names, type of ship, call signs, length and beam, heading, destination, latitude, and longitude, location of position-fixing antenna on the ship), short safety-related messages and other navigation data, from vessel nearby.

(d) The AIS receiver supplied shall be equipped with interface connecting to display including the display of the radar system. The AIS shall allow the radar display AIS information given by the AIS receiver.

36.9.2 Performance Requirements

36.9.2.1 Receiver Characteristic

(a) Frequency range:161.975 MHz and 162.025 MHz
(b) Channel interval: 25kHz
(c) Receiver sensitivity: -105dBm or better
(d) Dual parallel channel receiver

36.9.2.2 Aerial and Feeder

(a) The aerial provided shall be marine type aerial with at least 3 dBi gain, vertically polarized, omni-directional and suitable for mounting on the launch.
(b) The V.S.W.R. of the aerial installed shall be less than 1.5 : 1
(c) The aerial feeder shall be RG58U type or equivalent
Coaxial cable lightning suppresser with appropriate earthing connection shall be provided for protecting the radio equipment. All outdoor connector joint shall be properly covered by waterproof tape or material.

36.10 Radar Reflector

(a) One Radar Reflector shall be provided.

36.11 Installation Requirements

(a) General Requirements

36.11.a.1 In addition to the following requirement, the work under this Contract shall also comply with EMSD General Requirements for Electronic Contract ESG01at http://www.emsd.gov.hk/emsd/e_download/about/tcs/pdf/esg01.pdf where applicable.

36.11.a.2 The control panel of all equipment shall be installed and flush-mounted in the coxswain operation area unless otherwise specified. The mounting screw shall be detachable from the front of the equipment and the equipment shall be taken out at the front for further checking or replacement. The Contractor shall submit a layout plan showing the exact locations of the equipment.

36.11.a.3 Equipment supplied complete with all standard and/or maker recommended accessories as required for normal operation.

36.11.a.4 The equipment supplied shall complete with all the auxiliary items required for normal operation including connectors, circuit breakers, power sockets, interface device, plugs and cables with conduits. Additional power conditioners, filtering devices, power stabilizer or regulator shall be provided and installed at no extra cost if required.

36.11.a.5 RF connectors of suitable impedance shall be provided and used for connections of the RF cables, antennae and radio equipment. Connectors between the feeder cables and antennae shall be protected by weatherproof material to avoid water seepage.

36.11.a.6 All wiring shall be finished in a neat and approved manner.

36.11.a.7 Adequate measures to prevent interference between the electronic equipment shall be taken which include:-

(a) Separate screened conduits or trunkings shall be provided.
(b) Rules, regulations and recommended practices regarding screening of electric wiring must be observed.
(c) Receiving apparatus and other electronic equipment which may be affected by radio frequency induced voltages must be effectively earthed, screened and protected against such voltages.
(d) Lightning protection devices shall be fitted.

36.11.a.8 All sitting, installation and cabling work shall be undertaken to the highest standard to ensure:-

(a) Satisfactory performance of the equipment.
(b) Protection from mechanical and water damages.
(c) Ease of accessibility for maintenance and repair
(d) Manufacturers' recommendations are to be strictly observed.

36.11.a.9 The power, signal and control cables connecting to the flush-mounted equipment shall be long enough to let the equipment wholly place on a safe place like on the panel, table, etc. with valid cable connections for fault finding and equipment testing. These extended cables shall be properly managed and resided inside the console.

36.11.a.10 Induced mutual interference for a number of equipment shall be within an acceptable level.

(b) Installation Location

36.11.b.1 Installation location shall be easily accessible for inspection and maintenance. Exact location shall be subjected to the approval of the Government

36.11.b.2 Installed location of equipment shall not cause interference to other equipment by way of the emitted interference.

(c) Material and Workmanship

36.11.c.1 Material and equipment shall be of high quality, and shall comply with, where applicable, the appropriate British Standards and Code of Practice, together with any amendments made thereto, suitable for installation in the vessel.

36.11.c.2 All works shall be carried out in a first class workman-like manner and shall be subjected to the approval of the Government.

36.11.c.3 The Government reserves the right to reject any part of the installation not comply to the Specification. The Contractor shall carry out the necessary remedial work or replacement without extra cost or delay.

36.11.c.4 The Contractor shall provide all installation materials including cables, casing, mounting accessories and etc. which are durable and fire retarding. Where it is

impracticable for signal cables for data to be run inside conduits, PVC insulated and sheathed with armoured cable shall be used.

(d) Equipment Fixing and Interconnection

36.11.d.1 All switches, connectors, jacks and receptacles shall be clearly, logically and permanently marked during installation. All wires and cables shall be identified at every termination and connection point with permanent type markers suitable for installation in the vessel.

36.11.d.2 Interconnection of various items of equipment shall be mechanically and electrically connected by multi-pin connectors or terminals.

36.11.d.3 All cables shall be jointed by properly designed connectors or inside joint boxes. Where terminal blocks are used for connection cables, the tip of each conductor shall be crimped with a suitable terminal pin before it is inserted in to the terminal block.

36.11.d.4 The Contractor shall be responsible for providing and installing properly rated power cables from the power points to his own equipment.

(e) Electricity

36.11.e.1 The power supply shall be compatible with vessel's DC electrical system.

36.11.e.2 The equipment shall be protected by appropriately rated fuses. The fuses shall be contained in independent fuse holders which are easily accessible.

(f) Cable

36.11.f.1 All exposed cables and wiring shall be sheathed or protected by metal conduits.

36.11.f.2 Watertight cable glands shall be provided in way of watertight bulkhead or deck penetration.

36.11.f.3 Signal wiring shall be separated from power supply cables and housed in separate screened conduits or cable trunks.

36.11.f.4 Cables and wirings shall run behind the compartment lining. Where electric cables are necessary fitted on the decorative surface of bulkheads, they are to be enclosed in proper metal conduits.

(g) Labelling and Marking

36.11.g.1 Each cable shall be clearly labelled and preferably carry its own unique identification code.

36.11.g.2 Polarity of power cables shall be labelled.

36.11.g.3 All cables shall be clearly labelled and carry its own unique identification code.

36.12 Acceptance Test

(a) The acceptance tests for each of the electronic navigation equipment specified in this paragraph 36 shall comprise the following:

36.12.a.1 A bench acceptance test which includes functional tests and detailed measurements of the performance of the equipment to verify that each equipment complies with all the required performance specification.

36.12.a.2 On site commissioning test shall be carried out by the Contractor in the presence of the Electrical and Mechanical Services Department's (EMSD) representatives after completion of the installation of each system on the Vessel. The overall installation standard and operational features of each system shall be evaluated.

The test shall be carried out during Technical Acceptance.

(b) The Contractor shall arrange to submit test reports on the performance of the equipment and deliver the test reports and equipment to the Electrical and Mechanical Services Department's (EMSD) representatives for bench acceptance test prior to the installation of the equipment on the Vessel.

(c) The Contractor shall submit schedule of on site commissioning test of the electronic equipment installed onboard at least one month prior to the commissioning test date.

(d) The Contractor shall provide all the necessary test equipment and tools for carrying out the commissioning test and acceptance test at no extra cost.

36.13 Documentation & Quotation For the Proposed ENE

36.13.1 The Tenderer shall supply with its tender the following documentation

(a) Technical and proposed equipment information including integrated system equipment schematic diagram of all these general electronic equipment, in English sufficiently detailed to enable a technical appraisal of the equipment in this Chapter to be made.

(b) Tenderers shall list the electronic equipment required in this paragraph 36 with unit price in Schedule 1.

36.13.2 The Contractor shall upon delivery of the Vessel to the Government Dockyard, supply three sets of Operation Manual, Service Manual and integrated system/equipment schematic diagram in English language (at least 2 original) giving full details on the following in respect of each piece of ENE as specified in this paragraph 36 at no charge to the Government:

(a) Operations and working principals;
(b) Equipment functional description
(c) Equipment specifications;
(d) Schematic block diagrams and circuit diagrams with sufficient information and details for equipment maintenance and repairing;
(e) Calibration procedures;
(f) Equipment (adjustment/mounting procedure) and parameter settings;
(g) Part list with part numbers and locations (the adjustment/calibration tools/kit/program shall also include);
(h) Maintenance and troubleshooting instructions;
(i) Equipment interfacing with wiring diagram with clear signal labelling;
(j) Software operation manual for equipment driven by application software.
(k) As fitted conduit/trunking route diagrams for the electronic equipment installed onboard for the purpose of future maintenance are to be submitted.
(l) The design conduit/trunking route diagrams are to be submitted to MD and EMSD for approval during construction stage.

36.14 Training on Electronics Navigation Equipment specified in this paragraph 36

36.14.1 General requirements

(a) All training courses shall be held in the HKSAR.

(b) The Contractor shall provide appropriate classroom as well as on board training to the operational and technical staff to familiarise officers with the operation and maintenance of all the ENE specified in this paragraph 36. The trainer shall be able to communicate with the local trainees effectively.

(c) It is anticipated that two distinct types of training shall be required, namely:

(a) Operator Training
(b) Equipment Maintenance Training.

(d) The Tenderer shall submit a detailed course syllabus, a schedule for conducting the training course.

(e) For both types of training course, each trainee shall receive one copy of the comprehensive training documents before the start of each course. The Government shall have the right to reproduce all training documents for internal use.

(f) Training manual in Chinese and English shall be provided and submitted to MD and EMSD for approval at least one month prior to commencement of these two courses respectively.

(g) All training courses (including all venue, facilities, materials and manuals) shall be provided by the Contractor at no charge to the Government.

36.14.2 Operator Training Course

(a) This course is meant to be training for trainers.

(b) The course shall provide a full knowledge and appreciation of the day-to-day operation of all ENE specified in this paragraph 36. This shall include hands on demonstrations and operation of the equipment including the necessary routine cleansing requirement.

(c) The course shall be held immediately before the Delivery Acceptance of the Vessel.

(d) A total of up to 22 trainees will attend the course. The training course shall accommodate the specified number of trainees.

36.14.3 Equipment Maintenance Training Course

(a) The Contractor shall provide full training facilities (e.g. accommodation, facilities and equipment) with a training schedule. The course is to give the maintenance staff to acquire a full knowledge and appreciation of all aspects on the design considerations, day-to-day operation, inter-connected system operation, fault breakdown, routine maintenance and fault finding/ repairing procedures of all ENE specified in this paragraph 36. This shall include practical demonstrations and tests.

(b) The maintenance training shall include, but not limited to the following items:
   (a) Introduction of the equipment locations;
   (b) Equipment operational, working principle and functional descriptions;
   (c) Equipment block and schematic functional descriptions;
   (d) Equipment (adjustment/calibration procedure and) parameter settings;
   (e) Equipment construction and mounting;
   (f) Equipment interfacing and signal interfacing;
   (g) Preventive maintenance and trouble-shooting

(c) This shall enable technical staff to effectively maintain the equipment.

(d) The course shall be held immediately after the Delivery Acceptance of the Vessel.

(e) A total of up to 15 trainees will attend the course. The training course shall accommodate the specified number of traine

37 Services Support

37.1 General Philosophy

37.1.1 In determining the appropriate design for the Vessel, all of the following factors shall equally be taken into account without one outweighing another

37.1.1.1 Vessel performance (e.g. engine rating, size, etc.).
37.1.1.2 Initial cost.
37.1.1.3 On-going cost (e.g. maintenance cost, petrol consumption, spare parts, etc.).
37.1.1.4 Reliability (frequency and time to repair breakdown).
37.1.1.5 Time between maintenance periods.
37.1.1.6 Time to undertake scheduled maintenance (downtime).

37.1.2 Allowable Vessel downtime (including scheduled preventive maintenance and unscheduled repair and maintenance) shall not exceed 10% of the total hours of operation per month based on the operation profile as specified in paragraph 5 of this Chapter. The Tenderer shall propose a model of main engines with the necessary rating and power for the Vessel to enable compliance with this performance service level. Frequency of overhaul for the engine shall be consistent with the allowable Vessel downtime.

37.2 Maintainability – the Vessel shall be easy to maintain by ensuring that there shall be:

37.2.1 Good access to all installed items for monitoring, service and overhaul.
37.2.2 Ease access to in-situ service and maintenance in Hong Kong.

38 Information to be Provided Prior to and at Delivery Acceptance

38.1 Information provided prior to Delivery Acceptance:

38.1.1 Detailed inventory list for the whole Vessel to be submitted to the Government for approval at the time as mentioned in paragraph 4.3.6 of Chapter 1.
38.1.2 The inventory list shall cover all items specified in this Part (including all Equipment and fitting) down to major component/unit level.
38.1.3 Full details of each item includes:

38.1.3.1 Item name.
38.1.3.2 Description.
38.1.3.3 Type/model.
38.1.3.4 Quantity.
38.1.3.5 Manufacturer.
38.1.3.6 Manufacturer's reference number.
38.1.3.7 Location in Vessel.
38.1.3.8 Local agent/supplier address, telephone and fax numbers.
38.1.3.9 Order time.
38.1.3.10 Shelf life.
38.1.3.11 Unit cost.

38.1.4 FOUR copies of the inventory list shall be provided.

38.2 "As Fitted" drawings and other information shall be supplied.

The Contractor shall supply the following items upon Delivery Acceptance of the Vessel:

38.2.1 4 complete sets of paper print drawings of the Vessel and 1 soft copy (dwg format) n CD ROM (or USB memory stick) as per the Vessel delivered.
38.2.2 4 complete sets of paper print as fitted electrical schematic, cabling, wiring and single line diagrams for electrical equipment installed onboard and conduit / trunk route diagram.
38.2.3 4 copies of ship equipment list for all bought-in machineries and electrical equipment. The list shall include:

38.2.3.1 Description.
38.2.3.2 Type/model.
38.2.3.3 Makers part no. or equivalent.
38.2.3.4 Location.
38.2.3.5 Quantity.
38.2.3.6 Supplier or agents name and contact address.
38.2.3.7 Order time.
38.2.3.8 Shelf life.
38.2.3.9 Unit cost.

38.2.4 4 copies (at least 1 original) of maker operation, maintenance and workshop manuals for all machineries / equipment in English.

38.2.5 4 copies of "Docking Plan" which shall include the profile, plan and sections shall be prepared by the Contractor.

38.2.6 4 copies of Onboard Operator's Manual (English and Chinese) covering:

38.2.6.1 Daily user check and operation procedure.
38.2.6.2 Operating detail of each system.
38.2.6.3 Emergency operation procedure.

(The precise format and detail required will have to be subject to the Government's approval when the configuration of the Vessel and outfitting is decided.)

38.2.7 The first draft of the Onboard Operator's Manual (both English and Chinese) shall be submitted to MD for approval ONE month before documentation acceptance.

38.2.8 The documentation for all Equipment, spares and stores, special tools and test equipment shall be provided at the Delivery Acceptance of the Vessel.

38.3 Critical and Consumable Parts

38.3.1 All items of Critical and Consumable Parts shall be delivered to the Government Dockyard as per the requirements stipulated in Schedule 2, Delivery Schedule of Part V.

38.3.2 All items supplied shall be identical in make, quantity and size as they are installed on the Vessel upon Delivery Acceptance. All items shall be properly documented, preserved and packed.

38.4 Ship Model, Tools & Test Equipment for ENE

38.4.1 Delivery of the ship model (Item 6 of Schedule 1) to MD, and all test and tool equipment for the ENE will be directly to EMSD.

38.4.2 All items shall be properly documented, preserved and packed.

38.5 Photographs

38.5.1 As-Fitted Photographs

38.5.1.1 2 sets of colour prints (130 mm x 90 mm) from different aspects to give an overall picture of the various parts/areas of the Vessel shall be provided upon Delivery Acceptance.

38.5.1.2 Each print shall be enclosed in a suitable album and labelled showing the position of the content.

38.5.2 Official Photographs

38.5.2.1 Four (4) framed colour photographs of picture size not less than 350 mm x 270 mm and frame size not less than 510 mm x 400 mm showing the profile of the Vessel in HKSAR waters shall be provided upon Delivery Acceptance.

38.5.2.2 Four (4) 200 mm x 150 mm colour photographs showing the profile of the Vessel in HKSAR waters shall be provided upon Delivery Acceptance.

38.5.2.3 Four (4) 150 mm x 100 mm colour photographs showing the profile of the Vessel in HKSAR waters shall be provided upon Delivery Acceptance.

38.6 Certificates and Reports

Copies of the following documents (1 original with 2 copies and one softcopy stored in CD ROM or USB memory stick), filed in clear folders, shall be forwarded to MD at the time of Delivery Acceptance:

38.6.1 Associated test certificates.

38.6.2 Test performance certificates of equipment (e.g. electronics, switchboards, etc.).

38.6.3 Petrol outboard engine performance test certificates.

38.6.4 Complete record of the trial commissioning tests.

38.6.5 Original copy of the warranty certificates of all machineries, equipment and apparatus of the Vessel (valid for 12 months from the date of Acceptance Certificate of the Vessel).

38.6.6 Certificates of light and sound signalling equipment.

38.6.7 Builder certificates.

38.6.8 Certificates of building material.

38.6.9 Deviation card for compass (after adjustment in the HKSAR).

38.6.10 Hull construction material issued by MD recognized Classification Society.

38.6.11 Any other certificates as appropriate.

38.7 Ship Model

Tenderer is required to quote a separate price for the supply of one model, which shall be built to scale (scale 1:25), that represents in detail of the ship for display and training purposes. The price shall be **INCLUDED** from the Total Purchase Price of the Vessel in the Schedule 1. [E]

39 Training for Handling and Maintenance of the Vessel

39.1 In addition to the training to be provided for the ENE, the Contractor shall provide training in relation to the handling of the Vessel for the operational staff of the user department, training in relation to maintenance of engine and equipment onboard for the maintenance staff of the user department and for the Maintenance Section of Government Dockyard.

39.2 In order to ensure the navigational work-up team of the HPS acquire full knowledge and appreciation of all aspects of the manoeuvrability, vessel handling, turning characteristics, outboard engines, etc., the Contractor shall provide an appropriate training course for 6 officers of the HPS upon the Delivery Acceptance . An operation training programme shall be proposed for the consideration by GNC and HPS which shall include details of depth and duration of the training course. The training instructors have suitable qualifications acceptable to MD. A certificate shall also be issued to the trainees upon completion of the training course.

39.3 The engineering work-up team and front-line maintenance teams of the maintenance personnel of the Government Dockyard acquire full knowledge and appreciation of all aspects of the designs, day to day operation, breakdown, routine maintenance and fault diagnosis of the outboard engine/electrical distribution system, hull structural repair, etc. The Contractor shall therefore provide appropriate train-the-trainer courses for a total of 10 maintenance personnel from the Government Dockyard respectively in the HKSAR or overseas after the delivery of the Vessel to the Government Dockyard. A certificate shall also be issued to the trainees upon completion of the training course.

39.4 All of the above-mentioned training courses, and the facilities, venue, and materials necessary for the above-mentioned training courses and otherwise required in these Technical Specifications shall be provided by the Contractor at no charge to the Government unless otherwise specified. The training shall also be conducted in Chinese and English with relevant training materials to be supplied by the Contractor. The training materials shall be provided before the training, in both paper and CD-ROM format.

Part VII - Annex 1 - Warranty Services and Guarantee Slipping

1. Warranty Services

1.1 The Contractor is required to be a Government Recognised Servicing Shipyard ("GRSS") or appoints a GRSS in Hong Kong for providing Warranty Services in relation to all aspects of the Vessel during the Warranty Period, including Guarantee Slipping as stipulated in this Annex. If the Contractor appoints a GRSS to perform the Warranty Services, the Contractor shall ensure and procure that the GRSS appointed it will perform the Warranty Services and Guarantee Slipping in full compliance with the requirements of the Contract including those as set out in this Annex 1 as if references to the Contractor mean such GRSS.

1.2 The purposes of requiring GRSS for providing the Warranty Services is to facilitate rectification of defects without causing inconvenience to the Vessel's operation. As such, if the GRSS is a third party but not the Contractor, the Contractor shall give, and shall be deemed to have given, full authorization to that GRSS in the HKSAR for making decision in relation to all matters arising out of any warranty claims submitted by the Government, but the Government reserves all rights and claims against the Contractor in the event that any warranty claim has not been handled in accordance with the terms of the Contract.

1.3 For those Equipment in respect of which the manufacturer/supplier does not offer free one-year warranty on such equipment, the Contractor shall ensure that the GRSS will provide the Warranty Services throughout the Warranty Period at its own cost. For other loose equipment and installation, such as life-saving and fire-fighting equipment, etc., which are required to be serviced, inspected or renewed annually, the GRSS shall provide the servicing, inspection and renewal as per the manufacturer's requirements of that equipment or installation in the Warranty Period applicable to such items.

1.4 During the Warranty Period, when the Vessel is handed over to the GRSS for the Warranty Services and/or Guarantee Slipping, the Contractor shall be responsible for the due return of the Vessel in good order. Should there be any loss or damage of the Vessel or any Warranty Item (as defined in paragraph 1.5 below) caused by any reason whatsoever while the Vessel is in the possession or control of the Contractor (including even when the Vessel is at the Government Dockyard or a maintenance base of the user department) or at the shipyard of the Contractor or the GRSS appointed by it, the Contractor shall pay for the cost for the loss or damage plus 20% as and for liquidated damages but not as a penalty. Throughout the Warranty Period, notwithstanding anything to the contrary in the Contract, the Vessel and all Warranty Items are deemed to be at the Contractor's risks, and the Contractor shall insure and keep insured, at his own expense, a property insurance with the Government to be named as the sole payee, for an indemnity amount of not less than the purchase price of the Vessel plus 20% to protect the Government property against all risks. Certificate of Insurance and evidence showing premium being paid shall be available for inspection in advance. The Contractor provides this insurance policy before the signing of Contract. Any excess payable under the insurance policy shall be borne by the Contractor.

1.5 Total Vessel Warrant

It is required that the Vessel is covered by free of charge Warranty Services for one year after the date of Acceptance Certificate in respect of the Vessel. The Warranty Services shall cover the entire Vessel and all its Equipment (including engines and electronic equipment), fittings and outfit (including spare parts, and documentation) (collectively, "Warranty Items") against defects of design, construction, workmanship or materials and against any non-compliance with any of the Product Warranties. The Warranty Services may be backed up by the Contractor using individual equipment suppliers/manufacturers warranties but the Contractor shall remain solely liable to MD as a primary obligor to provide the Warranty Services. Notwithstanding and without prejudice to the Contract on warranty obligations for the total Vessel, any individual equipment supplier/manufacturers warranty extending beyond the one year total Vessel warranty must be assigned to the Government as appropriate.

1.6 Procedures for Warranty Claim

Without prejudice to the provisions of the Contract, a detailed procedure for dealing with warranty claims must be proposed by the Contractor and agreed to by MD before the issuance of the Acceptance Certificate of the Vessel. This shall be based on the following principles:

1.6.1 Any notification of claimed defect to be sent from MD to the Contractor or the GRSS appointed

by it through a defined route.

1.6.2 There shall be a joint inspection to examine the defect and the Contractor shall propose the appropriate and necessary remedial action to satisfaction of MD.

1.6.3 The Contractor shall undertake on-site Warranty Services (including provision of all replacement Warranty Item, spare parts, labour, materials, test equipment, and transportation) wherever at the option of the Government, the Vessel is berthed in Government Dockyard or maintenance bases of the user department. Taking the Vessel to the shipyard of the Contractor or of the GRSS appointed by it should be avoided unless absolutely necessary.

1.6.4 Rectification of defect must have minimum effect on operation of Vessel by provision of on loan equipment when the anticipated repair time exceeds the time frame as specified in paragraph 1.7.1 below.

1.7 Throughout the Warranty Period, the Contractor shall be responsible for the provision of free of charge corrective maintenance and rectification of all defects in all and any of the Warranty Items including repair and replacement as necessary. This shall, at no cost to MD, include Warranty Services to be performed by the Contractor described in the following sub paragraphs:

1.7.1 To attend to the Vessel for inspection and repair within 24 hours (excluding Hong Kong public holidays) of receiving the report of a fault ("fault report") and to take immediate action of rectifying the defect after inspection. Unless otherwise agreed by the Government, all corrective maintenance and rectification must be effected within 48 hours after the fault report is first issued. MD must be informed of what the corrective maintenance and rectification actions have been taken within 72 hours of receiving the relevant fault report.

1.7.2 To provide all necessary transport, replacements Equipment, spare parts, labour and materials, tools and testing instruments required for the corrective maintenance and rectification.

1.7.3 Any replacement item or part to be used shall be originated from the manufacturer of the original Warranty Item to be repaired and can be found in latest spare parts list issued by such manufacturer. Alternative components shall not be used without prior approval in writing of MD.

If the Contractor fails to respond to any reported warranty claims within 48 hours, MD may arrange defect corrective maintenance and rectification either on its own or by deploying another third party contractor as deemed appropriate with a view to minimizing any downtime incurred. In such case the Contractor shall compensate the Government for the full cost of such repairs plus 10% as and for liquidated damages but not as a penalty no later than 10 working days after a written demand has been served on the Contractor by MD.

1.8 Extension of Warranty

1.8.1 The Warranty Period for any Warranty Item shall be suspended whilst and if the Contractor fails to repair and correct satisfactorily the defects in such Warranty Item within 7 working days counting from the relevant fault report is first issued.

1.8.2 Warranty Items which are electronic equipment sub-assemblies, modules or components and which are replaced during the Warranty Period shall have a new warranty period of one year commencing from the date of replacement.

1.8.3 In relation to a Warranty Item, references to Warranty Period shall be construed to include such extended warranty period as mentioned in 1.8.1 and/or 1.8.2 above, depending whichever is applicable.

1.9 Recurrent Defects

During the Warranty Period, should a second and similar defect arise in relation to a Warranty Item, this shall be construed as conclusive evidence of the Warranty Item's unsuitability for the purpose intended, and the Contractor shall take immediate steps to conduct a thorough investigation jointly with MD at the Contractor's expense, to ascertain the reasons for any such defect and shall forthwith at MD's option and the Contractor's expense, procure and deliver another replacement Warranty Item with a new design suitable for the purpose intended to replace the original defective Warranty Item.

1.10 In the event that the Contractor proposes to modify any Warranty Item or any part of the Vessel in order

to repair or replace the same or another Warranty Item, the Contractor shall obtain the written advance consent of the Government to the proposed modification.

1.11 Throughout the Warranty Period, the Contractor shall maintain an inventory of spare parts, which shall be the same items as listed in Schedule 8 and in the same quantity in the shipyard of the Contractor or of the GRSS appointed by it and which the Contractor (or its GRSS) shall use for performing the Warranty Services. The Government will not provide its own inventory of the Critical and Consumable Parts to the Contractor for the provision of the Warranty Services.

1.12 Updated/Upgraded Information

It is expected that during the Warranty Period certain Warranty Item may be modified or changed. All documentation affected by this change must be updated to reflect the new situation. All the support documentation such as the Vessel inventory list, job information and maintenance scheduling in relation to these modification and changes shall be provided at the expiry of the Warranty Period.

2 Guarantee Slipping

2.1 As stated in the section "Warranty" above, Guarantee Slipping shall be carried out at the end of the original Warranty Period regardless of any subsequent extension in relation to any Warranty Item under the terms of the Contract.

2.2 At the Guarantee Slipping, the Contractor shall carry out the following work and provide all necessary materials, spare parts, labour and equipment in order to carry out such work:

2.2.1 Electrical and Mechanical Items (if applicable)

2.2.1.1 Main Engine and Gearbox

a) Replace engine's and gearbox's lubrication oil and lubrication oil filters.
b) Replace all engine petrol filters.
c) Change/clean all engine air filter elements.

2.2.1.2 All the belts of generator engines to be checked and adjusted if necessary;

a) Renew all zinc anodes in cooling water passage of coolers.
b) Adjust belts of engine and replace any deteriorated belts as found.
c) Adjust all engine inlet and exhaust valves clearances.
d) Check and test for correct operation of all engine instrumentation gauges and sensors.

Repair/replace any defective components.

e) Functional tests of all engine/gearbox protection system and associated sensor switches.

Repair/replace any defective components.

f) Strip down all engine starters and charge alternators for inspection. Renew all bearings. Clean up and Megger test all windings. Check for correct operation of all components. Carry out repairs or parts replacement if found necessary. Reassemble all items in good working condition.
g) Run up and check for normal operation of all engine/gearbox. Conduct sea trials afterwards.

Performance and trial reports shall be submitted.

h) All the above work shall be carried out by the local service agent of the engine manufacturers.
i) All involved work procedures and specifications shall be carried out in compliance with the corresponding service manuals from original engine manufacturer.
j) Clean thoroughly cooling water passages and refit all to good order.
k) Cooling water pump – strip down the pumps, clean and check wear down. Renew all defective parts and refit all the parts to good order.

2.2.1.3 Under-water Fittings

a) Replace all zinc anodes.
b) Inspect, clean, polish and coat propeller with oil.
c) Inspect and clear all marine growth on all under-water fittings.

2.2.2 Hull and Deck Items (if applicable)

2.2.2.1 Clean off all marine growth.

2.2.2.2 Renew all zinc anodes.

2.2.2.3 Repair damage paint properly and apply two coats of touch up primer, one coat of touch up and one full coat of finishing paint to hull below waterline.

2.2.2.4 Repair damage paint properly to hull exterior above waterline and all other area including hull interior, superstructure and fittings, etc. Apply two coats of touch up primer, one coat of touch up and one full finishing coat as original.

2.2.2.5 Paint in Vessel's name, draft marks and insignia two coats.

2.2.2.6 Scrape, disc-sand, wire brush, clean, wash and paint all deck surfaces. Apply two touch-up coats deck primer and one full coat non-slip deck paint to all decks.

2.2.2.7 Scrape, wire brush, clean and apply two touch-up coat primer, one touch up and one full finishing coat to deckhouse and all deck fittings including mast, rails, stanchions, hatches, etc.

2.2.2.8 All varnish work to sand down, smooth, clean and re-varnish two coats. Slightly sand down between coats.

2.2.2.9 Free, clean, grease and recondition all moving parts of the deck fittings, i.e. WT hatches, vent covers, roller and fairleads and anchor chain stopper, etc.

2.2.3 Dock Trial / Sea Trials after Guarantee Slipping

To demonstrate proper functioning and operation of the following before and during sea trials after Vessel's warranty slipping:

2.2.3.1 Before Sea Trial

a) Outboard engine control and steering system.
b) Outboard engine alarm and shut down function (including emergency stopping of engines).
c) Navigational equipment, light and sound signal.
d) Other trials as recommended and required.

2.2.3.2 At Sea Trial

a) Engine performance trial.
b) Ahead and astern running and crash stop test.
c) Steering trial.
d) Other trials as recommended and required.

Part VII - Annex 2 – Stability Requirement

1. General

All calculations and drawings must be in metric units. The calculations can be carried out by using a proven (viz. recognized by a government authority or classification society) computer program. If a computer program is used, the user manual, input and output format must first be acceptable to MD. The submitted output data must be accompanied with input data.

2. Inclining Experience

2.1 An inclining experiment is to be carried out with the attendance of a MD officer.

2.2 The Contractor shall submit at least 14 working days in advance a "Scheme of Inclining Experiment" which includes:

(a) The Vessel's intended condition of the vessel during the Inclining Experiment with intact stability results;
(b) The proposed locations and movements of inclining weights;
(c) The calculation of estimated heel and trim of vessel before and during the experiment;
(d) The proposed number, location and lengths of pendulum used; and
(e) The list of data to be measured (i.e. draughts, specific gravity of floating water, etc.)

2.3 The Inclining Experiment shall only be conducted:

(a) After the "Scheme of Inclining Experiment" has been approved by MD officers; and
(b) In the presence of MD officer(s). Request for attendance should be made at least five working days in advance.

2.4 The lightship weight and centres of gravity shall be calculated and presented in the Inclining Experiment Report. The GM of the Vessel after each and every shift of inclining weights shall be determined. Free surface of liquids remaining onboard shall be taken into account.

2.5 This Inclining Experiment Report shall be submitted to MD for approval. The report must include a statement from Contractor stating that the vessel should be safe to go to sea for the intended sea trials specified in the contract. No sea trials should be conducted until GNC of MD agree, based on the information given in the Inclining Experiment Report that it will be safe to carry out sea trials.

3 Stability Information Booklet

3.1 The Contractor is to supply to MD three copies of Stability Information Booklet. The Stability Information Booklet must be given to MD at time of Delivery Acceptance.

3.2 The vessel shall comply with the stability criteria as mentioned in Section 4 and 5 of this Appendix. In addition to the requirements stated above, the booklet in its final version shall include:

(a) Vessel particulars, sketch of general arrangement drawing showing different compartment and tank position, hydrostatic curves and cross curves;

(b) Tank calibration/sounding tables, fuel oil tank, fresh water tank, etc. These tables shall consist of locations of tanks (frame numbers), levels from tank bottom, capacities, VCG/LCG/TCG and free surface moments, and location of sounding points. The trim and heel of the vessel where these tables are applicable shall be stated;

(c) Stability calculation for each loading condition shall include a profile drawing, items of deadweight, light vessel, displacement, drafts, trim, VCG, GM (solid & fluid), LCG, down-flooding angle, statistical stability curve, etc.;

(d) Any other information as reasonably required by MD; and

(e) Inclining experiment report approved by MD.

3.3 In the preliminary and final stability calculation, the estimated and the final (obtained after conducting an Inclining Experiment) light vessel data shall be used respectively. Both the preliminary and final Stability Information Booklet shall include the following loading conditions (and any other conditions as may be required by MD during the construction of the vessel):

Loading Conditions		Fuel Oil (%)	Fresh Water (%)	Crew & Effects (Kg)
1	Lightship	Nil	Nil	Nil
2	Full Load Departure Condition (i.e. Trial Condition)	98	100	510

The maximum free surface moments shall be used in calculating the stability of the vessel in all of the above conditions.

Weight of each crew and passenger is assumed to be 75kg, and effect per person to be 10 kg.

VCG of each crew/officer will be assumed as 750mm above deck. LCG of each crew/officer will be in their most likely position onboard.

The vessel should be capable to operate safely at No.3 typhoon signal hoisted situation in Hong Kong.

4 Intact Stability Criteria

4.1 Stability will be considered satisfactory if the following criteria are complied with, after taking free surface effects into account, for lightship and loaded conditions as specified above.

(a) The maximum righting lever (GZ) occurs at angle of heel of not less than 25 degrees;

(b) The righting lever GZ should be at least 200mm at an angle of heel equal or greater than 30 degrees;

(c) The area under GZ curve should not be less than:

(i) 0.055 metre-radian up to an angle of 30 degrees angle of heel;

(ii) 0.090 metre-radian up to an angle of 40 degrees angle of heel or an angle at which the lower edges of any openings in the hull superstructures or deckhouses, being openings which cannot be closed weathertight, are immersed if that angle be less;

(iii) 0.030 metre-radian between the angle of heel of 30 and 40 degrees or such lesser angle as is referred to in (ii) above.

(d) The initial transverse metacentric height after correction of the free surface effects should not be less than 0.15 metre.

(e) In the worst service condition, the angle of heel due to the effect of either crowding of passengers or turning the vessel should not be greater than 10 degrees or 80% of angle of deck edge immersion, whichever is less. The effects should be determined as follows:

i) Crowding of passengers - the passengers should be assumed to be congregated at 0.25 square metre per person on the uppermost deck(s), with two-thirds of the passengers distributed on one side of the vessel and one-third on the other side. The vertical centre of gravity of each person should be taken as a standing passenger.

ii) Turning moment of vessel - the heeling moment developed due to the effect of turning the vessel should be calculated by the following formula:

Where

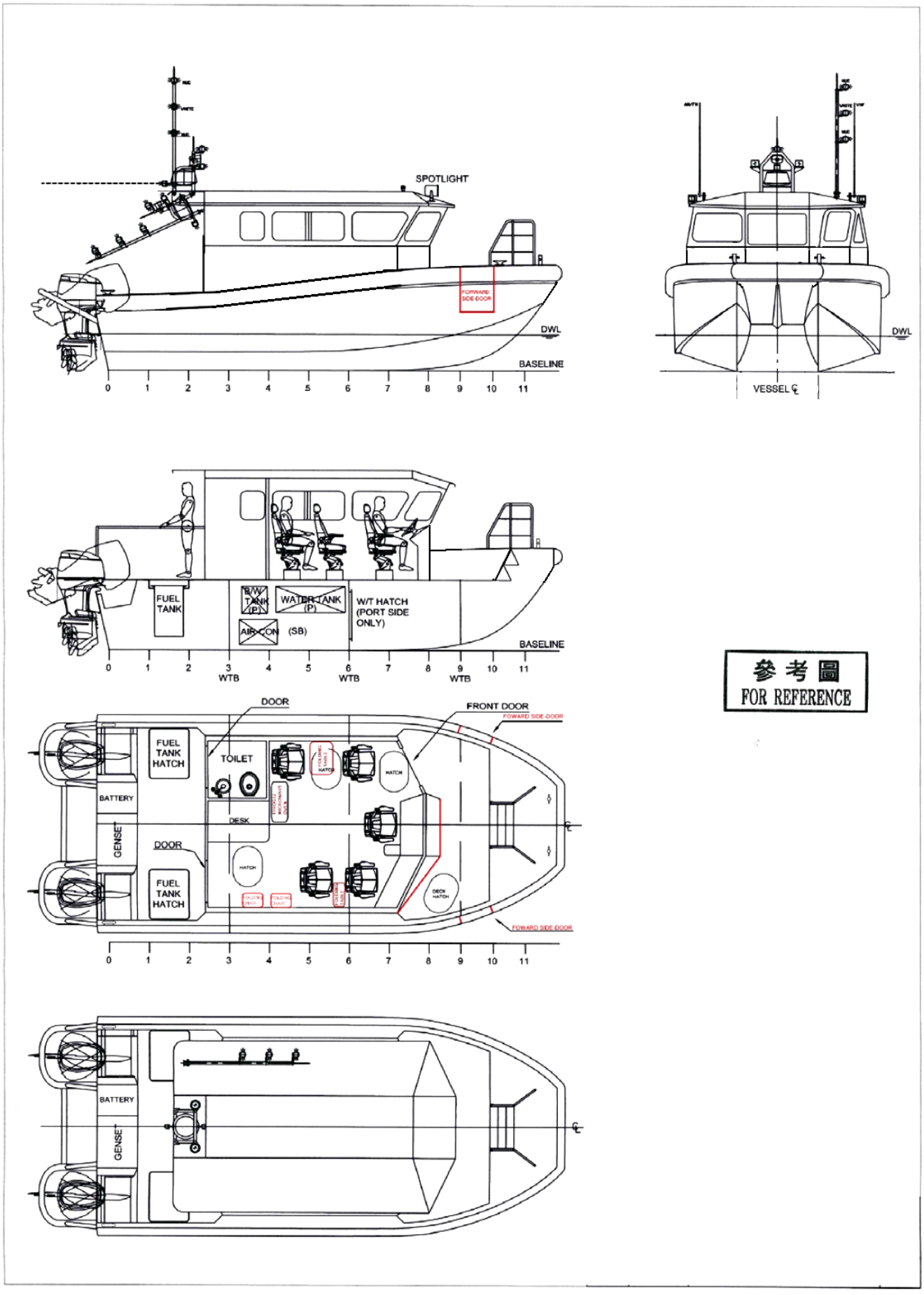
M_R	=	heeling moment in tonne-metres
M_R	=	$0.02\ V_o^2\ D_T\ (KG-d/2) / L_{WL}$
V_o	=	service speed, in metre/second
D_T	=	displacement in tonnes
KG	=	height of centre of gravity from keel in metres
d	=	mean draught in metres
L_{WL}	=	length of vessel at waterline in metres

2. Damaged Stability Criteria

Transverse bulkheads shall be arranged to sustain flooding of any one full compartment and asymmetric flooding due to damage of any smaller watertight compartment within full compartment. The residual stability shall be sufficient to maintain the vessel survive in case of damage.

N.B.: The Contractor should note that the opening to be used to determine the down flooding angle is to be agreed with MD.

Part VII – Annex 3 – Guidance General Arrangement Plan



Part VII – Annex 4 – Implementation Timetable - Milestones

Milestone		Completion Date	
		Item 1 (1st Vessel)	Item 2 (2nd Vessel)
1	**Issuance of "Notification of Conditional Acceptance"**	*To be advised after Tender Evaluation*	
2	**Contract Date (the date of the last party signing the Articles of Agreement)**	*The date when the last party signs the Articles of Agreement. The Government will not sign the Articles Agreement until and unless the Contractor fulfils all of the conditions precedent as specified in Clause 25.2 of the Conditions of Contract (save to the extent waived by the Government, if any).*	
3	**Kick-Off Meeting**	*To be held within one month after the Contract Date at Government Dockyard or Contractor's Shipyard*	
4	**Completion of hull structures including deckhouse**	*The Contractor shall propose the completion dates of Milestones 4-7 for GNC approval in one month after the Contract Date.*	
5	**Completion of installation of engines, propellers and steering system**		
6	**Conduct of all tests, inspections and trials as part of the Technical Acceptance including the Official Sea Trial**		
7	**Conduct of the on-site commissioning tests for the electronic navigation equipment on the Vessel (as part of the Technical Acceptance)**		
8	**Vessel Ready for Use (including without limitation the passing of the Technical Acceptance)**	*On or before the Delivery Date applicable to the same Vessel*	
9	**Delivery Date**	*The Delivery Date for the Vessel shall be no later than the date set out in Schedule 2 (Delivery Schedule) for that Vessel*	

Part VII – Annex 5 – Implementation Timetable – Drawing Submission

Item No	Drawings Approval	Completion Date	
		Item 1 (1st vessel)	**Item 2 (2nd vessel)**
1	General Arrangement Plan		
2	Lines Plan		
3	Major Structural Construction Plans		
4	Engine Mounting Arrangement		
5	Power / Speed Estimation and Curve		
6	Intact and damaged Stability Plan		
7	Details of draught marks with locations, range, datum reference, and detailed description of marking method		
8	Cabin layouts		
9	Inclining Experiment Report		
10	Details of Navigational / Communication Equipment		
11	Details of Deck Equipment, Outfitting, Furniture, etc.		
12	Details of Outboard Petrol Engines		
13	Control Console Arrangement and Schematic Diagram		
14	Instrumentation and Control System		
15	Calculation of Fuel Capacity		
16	Details of Electrical and Electronic Equipment		
17	Electrical Load Calculations		
18	Schematic Layout of Electrical Circuits		
19	Paint Schedule		
20	Lightning Protection Arrangement		
21	List of Spare Parts		
22	Others		

Note: All the drawings are required to submit in one month after Signing of Articles of Agreement for GNC approval /reference. Details of the submission have to be discussed in the Kick-Off Meeting.

Part VII – Annex 6 – Implementation – Main Inspection Items

Item No.	**Items to be Inspected**	Completion Date for the Main Inspection Items	
		Item 1 (1st vessel)	**Item 2 (2nd vessel)**
1	Painting Application		
1.1	Painting Schedule	Paint Schedule is required to submit in one month after the Contract Date (for Vessel Item 1 and 2).	
1.2	Hull Surface Finishing Inspection	Details of the inspections have to be discussed in the Kick-Off Meeting.	
1.3	1st Coating Inspection		
1.4	2nd Coating Inspection (if applicable)		
1.5	Final Coating Inspection		
2	Hull & Cabin Survey		
2.1	Documents Checking	Hull materials certificates (Mill Cert.) / Welding materials / WPR / PQR / Welder's certificates	
2.2	Stage 1 (Fit-up)	Details of the inspections have to be discussed in the Kick-Off Meeting.	
2.3	Stage 2 (Weld Final Inspection)		
2.4	Non-Destructive Tests (NDT)	Locations of the NDT to be discussed in the Kick-Off Meeting.	
2.5	Installation of zinc anodes		
2.6	Mock up inspection of cabin, console & toilets (also attended by two HPS officers).		
3	Equipment & Outfitting Survey	Details of the inspections have to be discussed in the Kick-Off Meeting.	
3.1	Seats		
3.2	Fenders		
3.3	Petrol Tanks		
3.4	Anchor and ropes		
3.5	Tally Plates		
3.6	Lightning Protection		
3.7	Foldable Mast		

3.8	Anti-Slipping Arrangement		
3.8	Air Conditioning System		
4	Machinery Survey		
4.1	Petrol Outboard Engines (Commissioning)	Details of the inspections have to be discussed in the Kick-Off Meeting.	
4.2	Propellers		
4.3	Steering System (Commissioning)		
4.4	Control and Instrumentation		
5	Electrical Survey		
5.1	DC Power Source (Commissioning)	Details of the inspections have to be discussed in the Kick-Off Meeting.	
5.2	Distribution Network		
5.3	Cable, Wiring and Fuse		
5.4	Navigation and Search Lights		
6	Electronic Navigational Equipment Survey		
6.1	Marine Daylight Viewing Colour Radar	The acceptance tests for the electronic equipment / systems shall comprise of three parts: bench tests, factory acceptance trials (FAT) and on-site commissioning tests as required on Clause 36.12 of Chapter 2 of Part VII. Details of the inspections have to be discussed in the Kick-Off Meeting.	
6.2	Fluxgate Compass		
6.3	DGPS		
6.4	Electronic Navigational Chart System		
6.5	Public Address / Broadcasting System		
6.6	Inter-communication System		
6.7	Fixed Radio Phone System		
6.8	Installation/Space/ Cabling		
7	Final Inspection and Trial		
7.1	Mock-Up Inspection for Control Console	Details of the inspections have to be discussed in the Kick-Off Meeting.	
7.2	Verification of Principal Dimension		
7.3	Inclining Experience		
7.4	Verification of Draught Marks		

7.5	Functional Tests of Equipment		
7.6	Official Sea-Trial	The Official Sea-Trial shall be conducted in HKSAR as part of requirements of the Technical Acceptance. Details of the inspections have to be discussed in the Kick-Off Meeting.	
7.6.1	Official Speed Trial		
7.6.2	Performance Test		
7.6.3	Manoeuvrability Tests		
7.6.4	Crash Stop Tests		
7.6.5	Astern Running / Emergency Steering Test		
7.6.6	Anchor Test		
7.6.7	Engine Repeat Starting Test		
7.6.8	Noise Level Test		
7.7	Bottom Survey on the Slipway at HKSAR		
8.	Training Plan		
8.1	Training for Operators	Details of the training have to be discussed in the Kick-Off Meeting.	
8.2	Training for Maintenance Staff		
8.3	Others		
9	Documentation		
9.1	Final / As-Built Drawings	Details of the documents submission have to be discussed in the Kick-Off Meeting.	
9.2	Equipment Manuals		
9.3	Sea-Trial Reports		

Part VII – Annex 7 – List of Government Dockyard Contractors (Item III – Hull, Deck & Tailshaft Group II)

Name of Contractor & Address	**Telephone No.**	**Fax No.**	**Contact Person**
Cheoy Lee Shipyards Ltd., 89 & 91 Hing Wah Street West, Lai Chi Kok, Kowloon, Hong Kong.	+852 2307 6333	+852 2307 5577	C Y Cheung
Chu Kong Group Shipyard Co. Ltd., Chu Kong Group Shipyard Building, 93 Hing Wah Street West, Lai Chi Kok, Kowloon, Hong Kong.	+852 2815 0333 +852 2987 7351	+852 2815 2188	Chan Wai Mui
Discovery Bay Enterprises Ltd., Unit 101, Discovery Bay Office Centre, No. 2, Plaza Lane, Discovery Bay, Lantau Island, Hong Kong.	+852 2987 3915 +852 2436 4883	+852 2987 5246 +852 2495 9327	Chan Kam Bue
Fat Kee Marine Repairing & Engineering Co. Ltd., P.O. BOX 78638, Mongkok Post Office, Kowloon, Hong Kong.	+852 2435 2435 +852 9224 0044	+852 2768 8811 +852 2435 3344	Siu Chan Shing
Hongkong United Dockyards Ltd., TYTL 108 RP, Sai Tso Wan Road, Tsing Yi Island,N.T., Hong Kong.	+852 2431 2606 +852 2742 1819 +852 2431 2644 +852 9094 5589 +852 6933 2733	+852 2433 0180	Philip Leung K F Leung Tsui Shek Yau
Hop Kee Engineering Work Ltd., SHX-508 Temporary Industrial Area Po Chong Wan, Shum Wan Road, Wong Chuk Hang, Hong Kong.	+852 2785 9221	+852 2785 9236	Lee Wai Ngung
Kwong Sang Engineering Co. Ltd., G/F., 13 Hop Kwan Street, Tai Kok Tsui, Kowloon, Hong Kong.	+852 2785 7879 +852 2785 7550 +852 9037 4890	+852 2786 2510	Chan Leung Kan
The Chans' Shipyard Ltd., Lot 22-23 Tam Kon Shan Road, North Tsing Yi Island, N.T. Hong Kong.	+852 2744 9113 +852 2310 8272 +852 9053 1211	+852 2744 9283	Lam Kwan Chung
The Hong Kong Shipyard Ltd., 98 Tam Kon Shan Road, Ngau Kok Wan, North Tsing Yi, N.T., Hong Kong.	+852 2436 7188	+852 2436 2011	Ma Chi Wai
Tung Hing Ship Builder & Engineering Works Ltd., 9 Wai On Street, G/F., Tai Kok Tsui, Kowloon, Hong Kong.	+852 9195 8155 +852 9196 0117 +852 2307 2533 +852 2307 1629	+852 2307 2637	Wong Tung Lam Cheung Sui Fan
Tung Wo Engineering Co. Ltd., 2705, 27/F, New Treasure Centre, 10 Ng Fong Street, San Po Kong, Kowloon, Hong Kong.	+852 2328 3363 +852 2391 3191 +852 9486 2760	+852 2328 3989 +852 2398 1039	Lo Kee Sang
Wang Tak Engineering & Shipbuilding Co. Ltd., 3/F., Wang Tak Building, 85 Hing Wah Street West, Lai Chi Kok, Kowloon, Hong Kong.	+852 2746 2888 +852 6770 6578	+852 2307 5500	K H Leung
Wing Yip Engineering Works Ltd., Lot 145, 64 Tam Kon Shan Road, Tsing Yi, N.T., Hong Kong.	+852 2786 3906 +852 2781 2626 +852 9236 9939 +852 9238 0502	+852 2332 2511	Clement Ngai Ngai Yee Ming
Woo Cheng Mechanical Engineering Factory Ltd., G/F, 195 Tai Kok Tsui Road, Kowloon, Hong Kong.	+852 2744 4113 +852 2307 6131 +852 9016 4527	+852 2744 4632 +852 2310 4884	Cheng King Yin
Yiu Lian Dockyards Ltd., No.1-7 Sai Tso Wan Road, Tsing Yi Island, N.T. Hong Kong	+852 2436 7728 +852 2436 7800 +852 2436 0679 +852 2436 0671 +852 2436 0690	+852 2436 0712 +852 2436 0590	Ng Yuen Biu Cheung Wai Yin

Part VII - Annex 8 – Conditions for Official Sea Trial

(1) Official Speed Trial

Conditions at Speed-Trial		
1	Person Onboard	6 Persons
2	Deadweight	75 kg x 6 = 500 kg
3	Fuel (Petrol)	40% - 50% of Fuel Tank
4	Other Equipment	100 kg
5	Sea Conditions	wind speed below 11 knots
6	Others	All the machinery and equipment as required in the Technical Specifications shall be fully installed onboard

The propulsion unit trim angle, or other hull trim devices, if installed, shall be adjusted to provide maximum full-throttle speed, short of excessive porpoising or propeller ventilation, so that there is no loss of directional control.

(2) Performance Tests

Conditions at Performance Tests		
1	Person Onboard	6 Persons
2	Deadweight	75 kg x 6 = 500 kg
3	Fuel (Petrol)	40% - 50% of Fuel Tank
4	Other Equipment	100 kg
5	Sea Conditions	wind speed below 11 knots
6	Others	All the machinery and equipment as required in the Technical Specifications shall be fully installed onboard

(3) Manoeuvrability Tests

Conditions at Manoeuvrability Tests		
1	Person Onboard	As per above requirements
2	Deadweight	As per above requirements
3	Fuel (Petrol)	As per above requirements
4	Other Equipment	100 kg
5	Sea Conditions	wind speed below 11 knots
6	Others	All the machinery and equipment as required in the Technical Specifications shall be fully installed onboard

(4) Crash Stop Tests

Conditions at Crash Stop Tests		
1	Person Onboard	6 Persons
2	Deadweight	75 kg x 6 = 500 kg
3	Fuel (Petrol)	40% - 50% of Fuel Tank
4	Other Equipment	100 kg
5	Sea Conditions	wind speed below 11 knots
6	Others	All the machinery and equipment as required in the Technical Specifications shall be fully installed onboard

(5) Astern Running Test / Emergency Steering Test

Conditions at Astern Running Test / Emergency Steering Test		
1	Person Onboard	6 Persons
2	Deadweight	75 kg x 6 = 500 kg
3	Fuel (Petrol)	40% - 50% of Fuel Tank
4	Other Equipment	100 kg
5	Sea Conditions	wind speed below 11 knots
6	Others	All the machinery and equipment as required in the Technical Specifications shall be fully installed onboard

Part VII - Annex 9 – Delivery Acceptance Procedures

1. Introduction

Delivery Acceptance Procedures (DAP) provide formal procedures for the acceptance of new government vessel(s) delivered to HKSARG. The term 'Delivery' is defined in the General Conditions of the Contract. DAP is regarded as the procedures which would lead to the physical possession of the vessel(s) by HKSARG (as represented by MD). Delivery is completed when the DM (as represented by AD/GF) has issued the Certificate of Acceptance.

DAP should follow the terms and conditions stipulated in the General Conditions of the Contract. If there is any discrepancy between DAP and the terms of the General Conditions, the General Conditions prevail. Any documents signed by MD officer during the process are solely a record of facts. The Payment Recommendation Procedures (PRP) must be followed in processing payment.

2. Procedures

When SS/GNC has received from the Contractor, a notification of delivery date and location (usually GD as stipulated in the contract), SS/GNC is to assign the Project Surveyors to take delivery of the vessel(s). One of the two Project Surveyors will be assigned as the Lead Project Surveyor to liaise with the Contractor, SMM, SSSM, SFM (if manned by MD crew) and the User Department and to take delivery of the vessel(s) in accordance with the DAP.

If the delivery date is deemed not suitable (e.g. due to approaching typhoon etc.), the Lead Project Surveyor is to seek the agreement of all concerned parties for an alternative delivery date and to inform SS/GNC in a Minute stating the reasons for the delay.

The Lead Project Surveyor, after consulting with the Project Surveyor, SMM, SSSM and SFM (if manned by MD crew), must ensure that:

(a). The vessel(s) will have safe access to the delivery location;
(b). The time of delivery is adequate for the purpose and convenient to all parties concerned;
(c). The Contractor fully understands and agrees with the procedures in the Delivery of the vessel and that the Contractor is fully aware of the PRP with respect to the payment at delivery;
(d). Safety in the delivery method of the vessel is acceptable (if in doubt, SFM's opinion should be obtained);
(e). GD has made the necessary arrangement to prevent unauthorized personnel to go onboard or near the vessel(s) at the time of taking delivery until the vessel is in the physical possession of the HKSAR Government and under the control of SFM or the user department;
(f). Specific requirements, if any, from SFM, SMM, SSSM and the User Department with respect to the method of Acceptance have been duly conveyed to the Contractor in good time (well before delivery) and accepted by the Contractor. (Lead Project Surveyor is to ensure all parties concerned understand the contractual obligation of the Contractor as far as Delivery is concerned); and
(g). If for any reason, any concerned parties wish to trial run the vessel during Delivery, the express consent in writing from the Contractor with respect to safety, crew, method and area of the sea trial etc must be obtained in advance before the delivery date.

Both the Lead Project Surveyor and Project Surveyor are to check the Inventory List provided by the Contractor for its completeness in accordance with the contract requirements. All comments received from SFM, SSSM and the User Department must be duly noted down in writing and presented in the Minute report (see below).

Upon taking physical possession of the vessel(s) and the vessel(s) is under the safekeeping of GD, the Lead Project Surveyor is to prepare a Minute report to SS/GNC which will include the following details:

(a) Date, time and location of the Delivery;
(b) References to all signed documents and Inventory List;
(c) Name and duty of each person presented in the Acceptance;
(d) Outstanding items, if any; and
(e) Any other matters that should be brought to SS/GNC's attention.

If there is any disagreement between the parties which cannot be resolved during the Delivery, the Lead Project Surveyor must inform SS/GNC immediately.

3. Authority and Responsibility

When the vessel(s) is about to be delivered to the Government Dockyard, the Lead Project Surveyor is responsible for liaising with and to notify GMD, SSSM, SFM (if manned by MD crew) and the User Department. He is also responsible for ensuring the acceptance of the delivery of the vessel(s) is in accordance with the Contract and the procedures laid down in DAP.

The Project Surveyors are responsible for checking the inventory onboard and making sure the inventory is also checked by the User Department (where appropriate) and SFM or their designated Officers (if manned by MD crew). Within this context, S(S)/GNC is responsible for checking the hull & general deck and hull outfitting items and S(E)/GNC is responsible for checking all machinery, electrical and electronic items. GNC Inspectors, assigned by SS/GNC for the project, are responsible for assisting the Project Surveyors in the acceptance of the vessel.

The Lead Project Surveyor is responsible for informing the Contractor and to report to SS/GNC of any item(s) which does not comply with the Contract specification at the time of delivery; and he should ensure the Contractor has acknowledged the fact in writing. The Project Surveyors should not sign any document until all details that constitute outstanding items are agreed in writing by the Contractor, SMM, SSSM and SFM (and by the User Department where in the judgment of the Project Surveyor is necessary).

GNC staff is NOT authorized to sign any document regarding the safekeeping (including mooring, fuel and water contents) of the vessel(s) delivered, as this is not GNC's area of responsibility. When signing the inventory document, the Project Surveyors must ensure they are satisfied with the quantity and quality of the items listed in the Inventory List.

SS/GNC is responsible for ensuring the Project Surveyors have carried out the acceptance of the vessel(s) in accordance with this DAP and report the Acceptance to GMD and AD/GF.

Part VII - Annex 10 – Definitions of Wave and Sea

Beaufort number	Description	Wind speed	Wave height	Sea conditions	Land conditions
0	Calm	< 1 km/h (< 0.3 m/s) < 1 mph < 1 knot < 0.3 m/s	0 m 0 ft	Flat.	Calm. Smoke rises vertically.
1	Light air	1.1–5.5 km/h (0.3–2 m/s) 1–3 mph 1–3 knot 0.3–1.5 m/s	0–0.2 m 0–1 ft	Ripples without crests.	Smoke drift indicates wind direction. Leaves and wind vanes are stationary.
2	Light breeze	5.6–11 km/h (2–3 m/s) 4–7 mph 4–6 knot 1.6–3.4 m/s	0.2–0.5 m 1–2 ft	Small wavelets. Crests of glassy appearance, not breaking	Wind felt on exposed skin. Leaves rustle. Wind vanes begin to move.
3	Gentle breeze	12–19 km/h (3–5 m/s) 8–12 mph 7–10 knot 3.5–5.4 m/s	0.5–1 m 2–3.5 ft	Large wavelets. Crests begin to break; scattered whitecaps	Leaves and small twigs constantly moving, light flags extended.
4	Moderate breeze	20–28 km/h (6–8 m/s) 13–17 mph 11–16 knot 5.5–7.9 m/s	1–2 m 3.5–6 ft	Small waves with breaking crests. Fairly frequent whitecaps.	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	29–38 km/h (8.1-10.6 m/s) 18–24 mph 17–21 knot 8.0–10.7 m/s	2–3 m 6–9 ft	Moderate waves of some length. Many whitecaps. Small amounts of spray.	Branches of a moderate size move. Small trees in leaf begin to sway.
6	Strong breeze	39–49 km/h (10.8-13.6 m/s) 25–30 mph 22–27 knot 10.8–13.8 m/s	3–4 m 9–13 ft	Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic bins tip over.
7	High wind, moderate gale, near gale	50–61 km/h (13.9-16.9 m/s) 31–38 mph 28–33 knot 13.9–17.1 m/s	4–5.5 m 13–19 ft	Sea heaps up. Some foam from breaking waves is blown into streaks along wind direction. Moderate amounts of airborne spray.	Whole trees in motion. Effort needed to walk against the wind.
8	Gale, fresh gale	62–74 km/h (17.2-20.6 m/s) 39–46 mph 34–40 knot 17.2–20.7 m/s	5.5–7.5 m 18–25 ft	Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	75–88 km/h (20.8-24.4 m/s) 47–54 mph 41–47 knot 20.8–24.4 m/s	7–10 m 23–32 ft	High waves whose crests sometimes roll over. Dense foam is blown along wind direction. Large amounts of airborne spray may begin to reduce visibility.	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over.
10	Storm,	89–102 km/h (24.7-28.3 m/s)	9–12.5 m	Very high waves with overhanging	Trees are broken off or

	whole gale	55–63 mph		crests. Large patches of foam from wave crests give the sea a white appearance. Considerable tumbling of waves with heavy impact. Large amounts of airborne spray reduce visibility.	uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.
		48–55 knot	29–41 ft		
		24.5–28.4 m/s			
11	Violent storm	103–117 km/h (28.6-32.5 m/s)	11.5–16 m	Exceptionally high waves. Very large patches of foam, driven before the wind, cover much of the sea surface. Very large amounts of airborne spray severely reduce visibility.	Widespread damage to vegetation. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
		64–73 mph			
		56–63 knot	37–52 ft		
		28.5–32.6 m/s			
12	Hurricane	≥ 118 km/h (≥ 32.8 m/s)	≥ 14 m	Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray, greatly reducing visibility.	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris and unsecured objects are hurled about.
		≥ 74 mph			
		≥ 64 knot	≥ 46 ft		
		≥ 32.7 m/s			

World Meteorological Organization (WMO) Sea State Code		
Sea State Code	Wave Height (meters)	Characteristics
0	0	Calm (glassy)
1	0 to 0.1	Calm (rippled)
2	0.1 to 0.5	Smooth (wavelets)
3	0.5 to 1.25	Slight
4	1.25 to 2.5	Moderate
5	2.5 to 4	Rough
6	4 to 6	Very rough
7	6 to 9	High
8	9 to 14	Very high
9	Over 14	Phenomenal
Character of the Sea Swell		
	0. None	
Low	1. Short or average 2. Long	
Moderate	3. Short 4. Average 5. Long	
Heavy	6. Short 7. Average 8. Long	
	9. Confused	

Part VII – Annex 11 – Markings and Colour Scheme

1. Vessel's Name

1.1 The Vessel's name shall be permanently displayed at both sides of the cabin and on the hull. The exact size and letters/numbers will be provided by GNC.

1.2 The wording and calligraphy should be in line with the one displayed on the existing HPS vessels. The wording and size of the Vessel's name shall be agreed by MD, including the colour to be used.

1.3 Location and size of the Contractor's name plate fixed on the Vessel shall be agreed by MD.

2. Colour Scheme

2.1 It is important that ALL colour used, including fabrics for upholstery, curtains, floor tiles and furniture, shall be approved by MD before installation.

2.2 All colour samples will be submitted by the Contractor for approval before application.

2.3 Piping colour codes will comply with BS 1710: 1975 or equivalent and be approved by MD.

2.4 Colour of draught marks, name, insignia and other colour markings, etc. will be provided, as required by MD.

3. Draught Marks

Draught Marks should be provided at the port and starboard of stem and stern.

Draught marks shall be in Arabic numerals 100 mm high. The marks shall be measured from the lowest point of the Vessel to the underside of the number markings.

The marks shall be spaced every 200 mm, and shall be marked as follows:

etc.
1M
8
6
etc.

Annex 12
Government Subsistence Allowance Rate
(w.e.f. 1.4.2015)

March 2015

Annex 4.10

Rates of subsistence allowance outside Hong Kong
(w.e.f. 1.4.2015)

Country / City	Currency	First 28 nights	Thereafter
Afghanistan			
Kabul	AFN	11,528	All rates to be reduced by 10% for stay in any one city
[Others]	AFN	5,764	
Albania			
Tirana	ALL	31,563	
[Others]	ALL	14,951	
Algeria			
Algiers	DZD	30,073	
[Others]	DZD	21,243	
Andorra			
Andorra	EUR	263	
Angola			
Luanda	AOA	56,539	
[Others]	AOA	56,539	
Anguilla			
Anguilla	XCD	622	
Antarctica			
Antarctica Region Posts	USD	1	
Antigua and Barbuda			
Antigua and Barbuda	XCD	746	
[Others]	XCD	162	
Argentina			
Buenos Aires	ARS	2,886	
Bariloche	ARS	2,785	
Mendoza	ARS	2,422	
[Others]	ARS	2,464	
Armenia			
Yerevan	AMD	97,819	
[Others]	AMD	97,819	
Ascension Island			
Ascension Island	SHP	26	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Australia			
Canberra	AUD	418	All rates to be reduced by 10% for stay in any one city
Adelaide	AUD	443	
Brisbane	AUD	384	
Broome	AUD	492	
Cairns	AUD	342	
Darwin, Northern Territory	AUD	353	
Exmouth	AUD	414	
Fremantle	AUD	399	
Hobart	AUD	418	
Melbourne	AUD	460	
Perth	AUD	491	
Richmond, NSW	AUD	372	
Sydney	AUD	429	
[Others]	AUD	342	
Austria			
Vienna	EUR	317	
Graz	EUR	321	
Innsbruck	EUR	314	
Linz	EUR	303	
Salzburg	EUR	331	
[Others]	EUR	314	
Azerbaijan			
Baku	AZN	283	
Ganja	AZN	169	
Qabala	AZN	166	
[Others]	AZN	140	
Bahamas			
Nassau	BSD	440	
Andros Island	BSD	236	
Eleuthera Island	BSD	255	
Grand Bahama Island	BSD	285	
[Others]	BSD	236	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Bahrain			
Bahrain	BHD	149	All rates to be reduced by 10%
Bangladesh			
Dhaka	BDT	22,414	for stay in any one city
Chittagong	BDT	13,216	
Sylhet	BDT	13,448	
[Others]	BDT	11,130	
Barbados			
Barbados	BBD	692	
Belarus			
Minsk	BYR	3,247,600	
[Others]	BYR	3,247,600	
Belgium			
Brussels	EUR	281	
Antwerp	EUR	267	
Brugge	EUR	200	
Diegem	EUR	281	
Kleine Brogel	EUR	176	
Liege	EUR	195	
SHAPE/Chievres	EUR	174	
Zaventem	EUR	281	
[Others]	EUR	138	
Belize			
Belize City	BZD	417	
Belmopan	BZD	466	
San Pedro	BZD	486	
[Others]	BZD	417	
Benin			
Cotonou	XOF	128,504	
[Others]	XOF	76,478	
Bermuda			
Bermuda	BMD	513	
Bhutan			
Bhutan	BTN	24,226	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Bolivia			
La Paz	BOB	1,346	All rates to be
Cochabamba	BOB	925	reduced by 10%
Santa Cruz	BOB	1,415	for stay in any one
[Others]	BOB	766	city
Bosnia-Herzegovina			
Sarajevo	BAM	299	
[Others]	BAM	299	
Botswana			
Gaborone	BWP	1,897	
Francistown	BWP	1,823	
Kasane	BWP	2,128	
Selebi Phikwe	BWP	1,555	
[Others]	BWP	1,971	
Brazil			
Brasilia	BRL	858	
Belem	BRL	718	
Belo Horizonte	BRL	642	
Fortaleza	BRL	794	
Foz do Iguacu	BRL	503	
Goiania	BRL	797	
Manaus	BRL	596	
Natal	BRL	721	
Porto Alegre	BRL	708	
Porto Velho	BRL	576	
Recife, Pernambuco	BRL	716	
Rio de Janeiro	BRL	1,270	
Salvador da Bahia	BRL	789	
Sao Paulo	BRL	1,047	
[Others]	BRL	753	
Brunei			
Bandar Seri Begawan	BND	370	
Jerudong	BND	447	
[Others]	BND	157	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Bulgaria			
Sofia	BGN	420	All rates to be reduced by 10% for stay in any one city
Bourgas	BGN	205	
Plovdiv	BGN	352	
Varna	BGN	240	
[Others]	BGN	234	
Burkina Faso			
Ouagadougou	XOF	134,227	
Bobo Dioulasso	XOF	78,559	
[Others]	XOF	78,559	
Burma			
Rangoon	MMK	343,559	
Naypyitaw	MMK	252,471	
[Others]	MMK	315,836	
Burundi			
Bujumbura	BIF	289,374	
[Others]	BIF	289,374	
Cabo Verde			
Praia	CVE	23,938	
Boa Vista Island	CVE	21,327	
Fogo	CVE	13,405	
Sal Island	CVE	25,070	
Sao Tiago Island	CVE	9,662	
Sao Vicente Island	CVE	19,673	
[Others]	CVE	10,881	
Cambodia			
Phnom Penh	KHR	963,564	
Siem Reap	KHR	992,145	
Sihanoukville	KHR	620,601	
[Others]	KHR	347,047	
Cameroon			
Yaounde	XAF	149,311	
Douala	XAF	143,589	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Limbe	XAF	116,016	
[Others]	XAF	90,003	All rates to be reduced by 10% for stay in any one city
Canada			
Ottawa	CAD	308	
Banff	CAD	501	
Calgary	CAD	439	
Dartmouth	CAD	331	
Edmonton	CAD	331	
Fort McMurray, Alberta	CAD	338	
Fredericton	CAD	305	
Gander, Newfoundland	CAD	300	
Halifax	CAD	331	
London, Ontario	CAD	234	
Mississauga	CAD	221	
Moncton	CAD	317	
Montreal	CAD	353	
Nanoose Bay	CAD	267	
Northwest Territories	CAD	235	
Prince Edward Island	CAD	339	
Quebec	CAD	439	
Regina, Saskatchewan	CAD	317	
Richmond	CAD	311	
Saskatoon, Saskatchewan	CAD	311	
Sidney	CAD	318	
St. John's, Newfoundland	CAD	372	
Toronto	CAD	336	
Vancouver	CAD	386	
Victoria	CAD	318	
Winnipeg	CAD	356	
[Others]	CAD	300	
Cayman Islands			
Cayman Islands	KYD	249	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Central African Republic			
Bangui	XAF	131,103	All rates to be reduced by 10% for stay in any one city
[Others]	XAF	131,103	
Chad			
Ndjamena	XAF	194,573	
[Others]	XAF	142,028	
Chagos Archipelago			
Chagos Archipelago	GBP	50	
Chile			
Santiago	CLP	170,970	
[Others]	CLP	162,003	
China			
Beijing	RMB	2,320	
Changchun	RMB	1,643	
Chengdu	RMB	1,483	
Chongqing	RMB	1,120	
Dalian	RMB	1,686	
Fuzhou	RMB	1,834	
Guangzhou	RMB	2,505	
Guilin	RMB	1,649	
Haikou	RMB	1,902	
Hangzhou	RMB	1,619	
Harbin	RMB	1,772	
Jinan	RMB	1,268	
Lhasa	RMB	1,126	
Lijiang	RMB	886	
Nanjing	RMB	1,379	
Nanning	RMB	1,539	
Ningbo	RMB	1,514	
Qingdao	RMB	1,508	
Sanya	RMB	1,717	
Shanghai	RMB	2,031	
Shantou	RMB	1,397	
Shenyang	RMB	1,846	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Shenzhen	RMB	2,456	
Suzhou	RMB	1,668	All rates to be reduced by 10% for stay in any one city
Tianjin	RMB	1,495	
Urumqi	RMB	1,385	
Wuhan	RMB	1,662	
Xiamen	RMB	1,668	
Xian	RMB	1,557	
Zhuhai	RMB	1,637	
[Others]	RMB	1,662	
Hong Kong			
Hong Kong	HKD	2,700	
Macau			
Macau	MOP	3,524	
Taiwan			
Taipei	NTD	8,526	
Kaohsiung	NTD	5,968	
Taichung	NTD	5,755	
[Others]	NTD	5,846	
Cocos (Keeling) Islands			
Cocos Islands	AUD	124	
Colombia			
Bogota	COP	773,019	
Barranquilla	COP	453,289	
Buenaventura	COP	443,171	
Cali	COP	503,879	
Cartagena	COP	831,704	
Medellin	COP	530,186	
San Andres	COP	505,903	
Santa Marta	COP	503,879	
[Others]	COP	505,903	
Comoros			
Moroni	KMF	147,080	
[Others]	KMF	68,273	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Cook Islands			
Rarotonga	NZD	487	All rates to be reduced by 10% for stay in any one city
[Others]	NZD	487	
Costa Rica			
San Jose	CRC	137,917	
[Others]	CRC	137,917	
Cote D'Ivoire			
Abidjan	XOF	199,260	
Yamoussoukro	XOF	90,005	
[Others]	XOF	81,161	
Croatia			
Zagreb	HRK	1,727	
Cavtat	HRK	2,527	
Dubrovnik	HRK	2,527	
Split	HRK	1,987	
[Others]	HRK	1,727	
Cuba			
Havana	CUC	188	
Guantanamo Bay	CUC	84	
Holguin	CUC	142	
Matanzas	CUC	144	
Santiago	CUC	147	
Trinidad	CUC	139	
[Others]	CUC	125	
Cyprus			
Nicosia	EUR	253	
Akrotiri	EUR	290	
Limassol	EUR	290	
Paphos	EUR	263	
[Others]	EUR	226	
Czech Republic			
Prague	CZK	9,066	
Brno	CZK	6,059	
[Others]	CZK	4,751	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Democratic Republic of The Congo			
Kinshasa	CDF	375,738	All rates to be reduced by 10% for stay in any one city
Bukavu	CDF	225,813	
Goma	CDF	184,167	
Lubumbashi	CDF	243,397	
Mbuji Mayi, Kasai	CDF	168,434	
[Others]	CDF	173,061	
Denmark			
Copenhagen	DKK	2,402	
Aalborg	DKK	2,119	
Lyngby	DKK	2,402	
Odense	DKK	2,213	
[Others]	DKK	2,154	
Djibouti			
Djibouti City	DJF	60,603	
[Others]	DJF	27,369	
Dominica			
Dominica	XCD	597	
Dominican Republic			
Santo Domingo	DOP	10,876	
La Romana	DOP	11,616	
Puerto Plata	DOP	6,874	
Sosua	DOP	6,874	
[Others]	DOP	8,266	
Ecuador			
Quito	USD	265	
Cuenca	USD	202	
Galapagos Islands	USD	576	
Guayaquil	USD	273	
Manta	USD	179	
[Others]	USD	202	
Egypt			
Cairo	EGP	1,909	
Alexandria	EGP	1,644	

Annex 4.10

Country / City		Currency	First 28 nights	Thereafter
	Aswan	EGP	1,623	
	Luxor	EGP	1,637	All rates to be reduced by 10% for stay in any one city
	Sharm el Sheikh	EGP	1,623	
	[Others]	EGP	1,330	
El Salvador				
	San Salvador	USD	221	
	[Others]	USD	99	
Equatorial Guinea				
	Malabo	XAF	193,533	
	[Others]	XAF	193,533	
Eritrea				
	Asmara	ERN	3,300	
	[Others]	ERN	1,215	
Estonia				
	Tallinn	EUR	189	
	[Others]	EUR	155	
Ethiopia				
	Addis Ababa	ETB	7,980	
	[Others]	ETB	1,736	
Falkland Islands				
	Falkland Islands	FKP	131	
Faroe Islands				
	Faroe Islands	DKK	2,184	
Fiji				
Suva		FJD	422	
Korolevu		FJD	312	
Nadi		FJD	599	
Natadola		FJD	1,104	
Sigatoka		FJD	478	
[Others]		FJD	422	
Finland				
	Helsinki	EUR	290	
	[Others]	EUR	235	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
France			
Paris	EUR	452	All rates to be reduced by 10% for stay in any one city
Bordeaux	EUR	306	
Cannes	EUR	496	
Deauville	EUR	411	
Lyon	EUR	312	
Marseille	EUR	333	
Montpellier	EUR	331	
Nice	EUR	321	
Strasbourg	EUR	341	
Toulouse	EUR	322	
[Others]	EUR	249	
French Guiana			
French Guiana	EUR	240	
French Polynesia			
French Polynesia	XPF	39,858	
Gabon			
Libreville	XAF	247,639	
[Others]	XAF	164,919	
Georgia			
Tbilisi	GEL	599	
Ajara Region	GEL	509	
Borjomi	GEL	284	
Gudauri	GEL	344	
Kutaisi	GEL	283	
[Others]	GEL	237	
Germany			
Berlin	EUR	289	
Boeblingen	EUR	297	
Bonames	EUR	346	
Bonn	EUR	259	
Bremen	EUR	281	
Cologne	EUR	312	
Dresden	EUR	286	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Duesseldorf	EUR	281	
Echterdingen	EUR	297	All rates to be
Erfurt	EUR	290	reduced by 10%
Eschborn	EUR	346	for stay in any one
Esslingen	EUR	297	city
Frankfurt am Main	EUR	346	
Garmisch-Partenkirchen	EUR	170	
Hamburg	EUR	285	
Hannover	EUR	239	
Heidelberg	EUR	290	
Herongen	EUR	281	
Hoechst	EUR	346	
Kalkar	EUR	281	
Koenigswinter	EUR	259	
Kornwestheim	EUR	297	
Leipzig	EUR	269	
Ludwigsburg	EUR	297	
Mainz	EUR	290	
Moenchen-Gladbach	EUR	281	
Munich	EUR	300	
Nellingen	EUR	297	
Oberammergau	EUR	170	
Offenbach	EUR	346	
Roedelheim	EUR	346	
Sindelfingen	EUR	297	
Stuttgart	EUR	297	
Tuebingen	EUR	297	
Twisteden	EUR	281	
Wiesbaden	EUR	276	
[Others]	EUR	259	
Ghana			
Accra	GHS	1,101	
Takoradi	GHS	938	
[Others]	GHS	476	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Gibraltar			
Gibraltar	GIP	101	All rates to be reduced by 10%
Greece			
Athens	EUR	268	for stay in any one city
Iraklion (Crete)	EUR	218	
[Others]	EUR	218	
Greenland			
Nuuk	DKK	2,514	
Ilulissat	DKK	2,349	
Kangerlussuaq	DKK	2,060	
Thule	DKK	1,641	
[Others]	DKK	1,859	
Grenada			
Grenada	XCD	784	
Guadeloupe			
Saint Martin (French Part)	EUR	161	
[Others]	EUR	124	
Guatemala			
Guatemala City	GTQ	1,711	
[Others]	GTQ	1,397	
Guinea			
Conakry	GNF	2,295,483	
[Others]	GNF	737,082	
Guinea-Bissau			
Bissau	XOF	123,822	
[Others]	XOF	60,870	
Guyana			
Georgetown	GYD	42,001	
[Others]	GYD	42,001	
Haiti			
Port-au-Prince	HTG	11,811	
Cap Haitien	HTG	10,701	
Jacmel	HTG	7,681	
Montrouis	HTG	10,612	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Petionville	HTG	11,811	
[Others]	HTG	7,992	All rates to be reduced by 10%
Holy See			
Holy See	EUR	457	for stay in any one city
Honduras			
Tegucigalpa	HNL	5,551	
Bay Islands	HNL	5,320	
La Ceiba	HNL	3,764	
San Pedro Sula	HNL	5,509	
Tela	HNL	3,890	
[Others]	HNL	3,049	
Hungary			
Budapest	HUF	62,326	
Papa	HUF	29,069	
[Others]	HUF	29,069	
Iceland			
Reykjavik	ISK	40,945	
Akureyri	ISK	31,981	
[Others]	ISK	28,952	
India			
New Delhi	INR	24,716	
Agra	INR	12,482	
Bangalore	INR	29,288	
Chennai	INR	25,396	
Goa	INR	13,470	
Hyderabad	INR	21,318	
Kolkata	INR	25,705	
Mumbai	INR	31,822	
Pune	INR	21,318	
Trivandrum	INR	14,706	
[Others]	INR	17,981	
Indonesia			
Jakarta	IDR	4,403,911	
Bali	IDR	4,781,042	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Banda Aceh	IDR	1,788,329	
Bandung	IDR	3,953,788	All rates to be
Batam	IDR	1,581,515	reduced by 10%
Denpasar	IDR	4,781,042	for stay in any one
Jayapura	IDR	2,031,639	city
Medan	IDR	1,776,163	
Surabaya	IDR	2,481,762	
Timika, Irian Jaya	IDR	3,917,291	
Yogyakarta	IDR	1,751,832	
[Others]	IDR	1,776,163	
Iran			
Tehran	IRR	4,138,345	
[Others]	IRR	4,138,345	
Iraq			
Baghdad	IQD	178,805	
Erbil	IQD	320,455	
[Others]	IQD	140,489	
Ireland			
Dublin	EUR	348	
Cork	EUR	251	
Galway	EUR	259	
[Others]	EUR	232	
Israel			
Tel Aviv	ILS	1,928	
Eilat	ILS	1,965	
En Boqeq	ILS	1,484	
Haifa	ILS	1,506	
Herzliya-Pituach	ILS	1,704	
Sedom	ILS	1,484	
Tiberias	ILS	1,535	
[Others]	ILS	1,535	
Italy			
Rome	EUR	457	
Bari	EUR	243	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Bologna	EUR	368	
Bolzano	EUR	228	All rates to be
Capri	EUR	348	reduced by 10%
Catania	EUR	251	for stay in any one
Como	EUR	438	city
Ferrara	EUR	254	
Florence	EUR	374	
Gaeta	EUR	170	
Genoa	EUR	319	
La Spezia	EUR	227	
Milan	EUR	421	
Modena	EUR	243	
Naples	EUR	262	
Palermo	EUR	247	
Pisa	EUR	211	
Pordenone-Aviano	EUR	146	
Ravenna	EUR	227	
Reggio Emilia	EUR	256	
Rimini	EUR	272	
Siena	EUR	348	
Taormina	EUR	251	
Treviso	EUR	269	
Trieste	EUR	298	
Turin	EUR	355	
Venice	EUR	472	
Verona	EUR	251	
Vicenza	EUR	146	
[Others]	EUR	287	
Jamaica			
Kingston	JMD	29,329	
[Others]	JMD	29,329	
Japan			
Tokyo City	JPY	43,415	
Akashi	JPY	34,974	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Akita	JPY	24,339	
Amagasaki	JPY	34,974	All rates to be
Aomori	JPY	23,243	reduced by 10%
Asahikawa	JPY	22,146	for stay in any one
Ashiya	JPY	36,399	city
Awashima	JPY	57,558	
Beppu	JPY	33,329	
Chitose	JPY	21,050	
Fukui	JPY	18,419	
Fukuoka	JPY	36,508	
Fukuyama	JPY	19,296	
Gifu	JPY	33,548	
Hamamatsu	JPY	27,628	
Hiroshima	JPY	27,628	
Itazuke	JPY	36,508	
Izumisano	JPY	32,671	
Kagoshima	JPY	28,615	
Kanazawa	JPY	22,694	
Kitakyushu	JPY	32,671	
Kochi	JPY	23,900	
Komaki	JPY	27,957	
Kumamoto	JPY	34,206	
Kurashiki	JPY	44,841	
Kure	JPY	26,970	
Kushiro	JPY	19,515	
Kyoto	JPY	42,758	
Matsue	JPY	18,967	
Matsuyama	JPY	27,628	
Miyazaki City	JPY	44,621	
Morioka	JPY	22,804	
Nagasaki	JPY	40,675	
Nagoya	JPY	36,070	
Nara	JPY	23,900	
Narita	JPY	31,904	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Niigata	JPY	20,721	
Nishinomiya	JPY	36,399	All rates to be reduced by 10% for stay in any one city
Obihiro	JPY	24,339	
Oita	JPY	25,435	
Okayama	JPY	31,575	
Okinawa Prefecture	JPY	35,851	
Osaka-Kobe	JPY	34,974	
Otsu	JPY	29,163	
Oyama	JPY	20,502	
Sapporo	JPY	33,768	
Sasebo	JPY	18,857	
Sendai	JPY	31,685	
Shiga	JPY	29,163	
Takamatsu	JPY	23,023	
Takayama	JPY	29,492	
Tokushima	JPY	22,694	
Tokyo-To	JPY	29,821	
Tottori	JPY	24,339	
Toyama	JPY	27,957	
Toyonaka	JPY	32,342	
Tsu	JPY	28,176	
Wakayama	JPY	29,382	
Yamato	JPY	25,326	
Yokohama	JPY	28,944	
Yokota	JPY	18,199	
Yufuin	JPY	30,369	
[Others]	JPY	28,176	
Jerusalem			
Jerusalem	ILS	1,837	
Jordan			
Amman	JOD	276	
Aqaba	JOD	178	
Dead Sea/Jordan Valley	JOD	227	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Petra	JOD	213	
[Others]	JOD	178	All rates to be reduced by 10%
Kazakhstan			
Almaty	KZT	57,425	for stay in any one city
Aktau	KZT	55,608	
Astana	KZT	67,783	
[Others]	KZT	42,887	
Kenya			
Nairobi	KES	36,604	
Lamu	KES	33,926	
Malindi	KES	32,230	
Mara Area Region	KES	27,498	
Mombasa	KES	24,195	
Mt. Kenya Area	KES	30,623	
Nanyuki	KES	5,178	
Watamu	KES	28,748	
[Others]	KES	17,320	
Kiribati			
Christmas Island	AUD	161	
Tarawa	AUD	165	
[Others]	AUD	165	
Korea			
Seoul	WON	332,343	
Busan	WON	340,838	
Changwon	WON	229,349	
Cheju	WON	361,012	
Chinju	WON	186,877	
Chongju	WON	150,776	
Chonju	WON	268,635	
Chung Ju	WON	174,135	
Incheon	WON	301,551	
Kimhae	WON	162,455	
Kumi	WON	220,854	
Kwangju	WON	242,090	

Annex 4.10

Country / City		Currency	First 28 nights	Thereafter
	Kyongju	WON	279,253	
	Masan	WON	165,641	All rates to be reduced by 10% for stay in any one city
	Pyeongchang	WON	347,209	
	Pyongtaek	WON	173,073	
	Sokcho	WON	242,090	
	Taegu	WON	231,472	
	Taejon	WON	233,596	
	Uijongbu	WON	151,837	
	Ulsan	WON	341,900	
	[Others]	WON	151,837	
Kosovo				
	Pristina	EUR	149	
	[Others]	EUR	81	
Kuwait				
	Kuwait City	KWD	130	
	[Others]	KWD	130	
Kyrgyzstan				
	Bishkek	KGS	16,886	
	Issyk-Kul Region	KGS	10,425	
	[Others]	KGS	6,950	
Laos				
	Vientiane	LAK	1,704,737	
	Luang Prabang	LAK	2,195,250	
	[Others]	LAK	1,535,871	
Latvia				
	Riga	EUR	205	
	[Others]	EUR	205	
Lebanon				
	Beirut	LBP	317,275	
	[Others]	LBP	317,275	
Lesotho				
	Maseru	LSL	1,885	
	[Others]	LSL	2,189	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Liberia			
Monrovia	LRD	26,993	All rates to be reduced by 10% for stay in any one city
[Others]	LRD	10,614	
Libya			
Tripoli	LYD	553	
Benghazi	LYD	242	
Misurata	LYD	242	
Sirte	LYD	242	
[Others]	LYD	198	
Liechtenstein			
Liechtenstein	CHF	407	
Lithuania			
Vilnius	EUR	241	
Palanga	EUR	227	
[Others]	EUR	176	
Luxembourg			
Luxembourg	EUR	368	
Macedonia			
Skopje	MKD	12,430	
Ohrid	MKD	8,857	
[Others]	MKD	8,857	
Madagascar			
Antananarivo	MGA	630,332	
Nosy Be	MGA	566,501	
[Others]	MGA	444,158	
Malawi			
Lilongwe	MWK	96,269	
Blantyre	MWK	96,269	
Mangochi	MWK	81,610	
Salima	MWK	108,550	
[Others]	MWK	81,610	
Malaysia			
Kuala Lumpur	MYR	917	
Kota Kinabalu, Sabah	MYR	616	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Kuantan	MYR	553	
Langkawi	MYR	897	All rates to be
Melaka	MYR	488	reduced by 10%
Penang	MYR	583	for stay in any one
[Others]	MYR	616	city
Maldives			
Maldives	MVR	6,752	
Mali			
Bamako	XOF	135,788	
[Others]	XOF	65,553	
Malta			
Malta	EUR	211	
Marshall Islands			
Majuro	USD	215	
Kwajalein Atoll	USD	176	
Likiep Atoll	USD	113	
[Others]	USD	83	
Martinique			
Martinique	EUR	282	
Mauritania			
Nouakchott	MRO	63,904	
Kaedi	MRO	25,970	
Nouadhibou	MRO	38,518	
[Others]	MRO	26,554	
Mauritius			
Mauritius	MUR	7,453	
Mayotte Islands			
Mayotte Islands	EUR	163	
Mexico			
Mexico City, D.F.	MXN	4,866	
Acapulco	MXN	3,522	
Cabo San Lucas	MXN	5,122	
Campeche	MXN	2,568	
Cancun	MXN	4,853	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Chihuahua	MXN	2,554	
Ciudad Juarez	MXN	1,895	All rates to be reduced by 10% for stay in any one city
Ciudad Victoria	MXN	2,030	
Colima	MXN	2,621	
Cozumel	MXN	3,092	
Cuernavaca	MXN	2,836	
Culiacan	MXN	1,707	
Ensenada	MXN	2,823	
Guadalajara	MXN	3,226	
Hermosillo	MXN	2,339	
Huatulco	MXN	2,890	
Ixtapa Zihuatanejo	MXN	2,514	
La Paz	MXN	2,541	
Manzanillo	MXN	3,078	
Matamoros	MXN	2,030	
Mazatlan	MXN	2,500	
Merida	MXN	2,890	
Mexicali	MXN	2,984	
Monterrey	MXN	3,455	
Morelia	MXN	2,312	
Nogales	MXN	2,594	
Nuevo Laredo	MXN	2,151	
Playa del Carmen, Quintana Roo	MXN	3,078	
Puebla	MXN	2,662	
Puerto Penasco	MXN	2,756	
Puerto Vallarta	MXN	3,764	
Queretaro	MXN	2,312	
San Carlos	MXN	2,178	
San Miguel de Allende	MXN	2,406	
Tapachula	MXN	2,030	
Tijuana	MXN	2,742	
Valle del Bravo	MXN	4,530	
Veracruz	MXN	2,568	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Zacatecas	MXN	2,648	
[Others]	MXN	2,245	All rates to be reduced by 10%
Micronesia			
Pohnpei	USD	201	for stay in any one city
Chuuk	USD	185	
Kosrae	USD	198	
Yap	USD	198	
[Others]	USD	185	
Moldova			
Chisinau	MDL	3,413	
[Others]	MDL	3,413	
Monaco			
Monaco	EUR	496	
Mongolia			
Ulaanbaatar	MNT	523,688	
[Others]	MNT	295,838	
Montenegro			
Podgorica	EUR	250	
[Others]	EUR	250	
Montserrat			
Montserrat	XCD	381	
Morocco			
Rabat	MAD	2,299	
Agadir	MAD	2,053	
Casablanca	MAD	2,790	
Fes	MAD	3,010	
Marrakech	MAD	2,790	
Tangier	MAD	2,439	
Taroudant	MAD	2,202	
[Others]	MAD	2,001	
Mozambique			
Maputo	MZN	8,823	
Pemba	MZN	9,348	
[Others]	MZN	9,348	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Namibia			
Windhoek	NAD	2,731	All rates to be reduced by 10% for stay in any one city
Etosha	NAD	1,738	
Swakopmund	NAD	2,268	
Walvis Bay	NAD	1,873	
[Others]	NAD	1,659	
Nauru			
Nauru	AUD	286	
Nepal			
Kathmandu	NPR	25,344	
Pokhara	NPR	18,145	
[Others]	NPR	18,540	
Netherlands			
The Hague	EUR	282	
Amsterdam	EUR	341	
Coevorden	EUR	249	
Eindhoven	EUR	291	
Lisse	EUR	271	
Maastricht	EUR	338	
Noordwijk	EUR	269	
Papendrecht	EUR	290	
Rotterdam	EUR	290	
Schiphol	EUR	291	
Utrecht	EUR	255	
Ypenburg	EUR	282	
[Others]	EUR	274	
Netherlands Antilles			
Curacao	ANG	549	
Aruba	ANG	603	
Bonaire	ANG	394	
Saba	ANG	538	
Sint Maarten (Dutch Part)	ANG	542	
[Others]	ANG	394	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
New Caledonia			
New Caledonia	XPF	27,361	All rates to be reduced by 10% for stay in any one city
New Zealand			
Wellington	NZD	434	
Auckland	NZD	450	
Christchurch	NZD	396	
Queenstown	NZD	344	
Rotarua	NZD	339	
[Others]	NZD	328	
Nicaragua			
Managua	NIO	6,222	
Corn Island	NIO	4,732	
San Juan del Sur	NIO	8,157	
[Others]	NIO	4,000	
Niger			
Niamey	XOF	104,572	
[Others]	XOF	81,161	
Nigeria			
Abuja	NGN	93,420	
Bauchi	NGN	48,919	
Calabar	NGN	37,793	
Enugu	NGN	40,248	
Ibadan	NGN	25,850	
Jos	NGN	40,084	
Kaduna	NGN	61,844	
Kano	NGN	54,481	
Lagos	NGN	66,588	
Maiduguri	NGN	30,431	
Port Harcourt	NGN	64,462	
Sokoto	NGN	27,650	
Warri	NGN	38,448	
Yenagoa	NGN	36,975	
[Others]	NGN	30,431	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Niue			
Niue	NZD	189	All rates to be reduced by 10%
Norway			
Oslo	NOK	2,384	for stay in any one city
Stavanger	NOK	2,268	
[Others]	NOK	2,384	
Oman			
Muscat	OMR	160	
Salalah	OMR	111	
[Others]	OMR	111	
Pakistan			
Islamabad	PKR	31,870	
Faisalabad	PKR	18,343	
Karachi	PKR	31,767	
Lahore	PKR	35,149	
Peshawar	PKR	20,597	
Quetta	PKR	22,237	
[Others]	PKR	22,237	
Palau			
Koror	USD	287	
[Others]	USD	287	
Panama			
Panama City	PAB	254	
Colon	PAB	254	
David, Chiriqui	PAB	195	
[Others]	PAB	142	
Papua New Guinea			
Port Moresby	PGK	1,254	
[Others]	PGK	804	
Paraguay			
Asuncion	PYG	1,215,104	
Ciudad del Este	PYG	977,464	
Pegro Juan	PYG	542,537	
[Others]	PYG	547,021	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Peru			
Lima	PEN	980	All rates to be reduced by 10% for stay in any one city
Cusco	PEN	963	
Paracas	PEN	792	
[Others]	PEN	569	
Philippines			
Manila	PHP	10,638	
Cebu	PHP	8,170	
Davao City	PHP	6,823	
[Others]	PHP	8,439	
Poland			
Warsaw	PLN	911	
Gdansk	PLN	832	
Katowice	PLN	1,027	
Krakow	PLN	1,179	
Poznan	PLN	1,063	
Wroclaw	PLN	812	
Zakopane	PLN	729	
[Others]	PLN	812	
Portugal			
Lisbon	EUR	210	
Cascais	EUR	183	
Estoril	EUR	183	
Faial Island	EUR	157	
Madeira Islands	EUR	156	
Oeiras	EUR	183	
Oporto	EUR	172	
Ponta Delgada	EUR	203	
Sao Miguel Island	EUR	203	
[Others]	EUR	148	
Qatar			
Doha	QAR	1,242	
[Others]	QAR	1,242	

Annex 4.10

Country / City		Currency	First 28 nights	Thereafter
Republic of the Congo				
	Brazzaville	XAF	184,688	All rates to be reduced by 10% for stay in any one city
	[Others]	XAF	184,688	
Reunion				
	Reunion	EUR	175	
Romania				
	Bucharest	RON	892	
	Constanta	RON	626	
	[Others]	RON	643	
Russia				
	Moscow	RUB	19,630	
	Saint Petersburg	RUB	19,273	
	Sochi	RUB	20,106	
	Vladivostok	RUB	13,285	
	Yuzhno-Sakhalinsk	RUB	14,673	
	[Others]	RUB	8,923	
Rwanda				
	Kigali	RWF	199,675	
	Akagera	RWF	170,068	
	Gisenyi	RWF	112,920	
	Ruhengeri	RWF	118,428	
	[Others]	RWF	112,920	
Saint Helena				
	Saint Helena	SHP	43	
Saint Kitts and Nevis				
	Saint Kitts and Nevis	XCD	1,051	
Saint Vincent and the Grenadines				
	Saint Vincent and the Grenadines	XCD 673		
Samoa Islands				
	Samoa	WST	694	
San Marino				
	San Marino	EUR	194	

Annex 4.10

Country / City		Currency	First 28 nights	Thereafter
Sao Tome and Principe				
	Principe	STD	5,911,053	All rates to be reduced by 10% for stay in any one city
	Sao Tome	STD	5,252,116	
Saudi Arabia				
	Riyadh	SAR	1,819	
	Dhahran Area	SAR	1,422	
	Eskan	SAR	473	
	Jeddah	SAR	1,587	
	Medina	SAR	792	
	Taif	SAR	773	
	[Others]	SAR	1,587	
Senegal				
	Dakar	XOF	159,720	
	Mbour	XOF	105,093	
	[Others]	XOF	83,762	
Serbia				
	Belgrade	RSD	33,200	
	[Others]	RSD	13,336	
Seychelles				
	Seychelles	SCR	5,936	
Sierra Leone				
	Freetown	SLL	857,025	
	[Others]	SLL	417,525	
Singapore				
	Singapore	SGD	578	
Slovak Republic				
	Bratislava	EUR	271	
	Zilina	EUR	151	
	[Others]	EUR	178	
Slovenia				
	Ljubljana	EUR	237	
	Portoroz	EUR	232	
	[Others]	EUR	237	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Solomon Islands			
Solomon Islands	SBD	2,275	All rates to be reduced by 10%
Somalia			
Mogadishu	SOS	161,338	for stay in any one city
[Others]	SOS	131,087	
South Africa			
Pretoria	ZAR	3,024	
Bloemfontein	ZAR	2,076	
Cape Town	ZAR	3,995	
Durban	ZAR	3,205	
Johannesburg	ZAR	3,961	
Sun City	ZAR	2,923	
[Others]	ZAR	2,257	
South Sudan			
Juba	SDG	1,549	
[Others]	SDG	1,549	
Spain			
Madrid	EUR	321	
Almeria	EUR	244	
Balearic Islands	EUR	280	
Barcelona	EUR	324	
Bilbao	EUR	211	
Fuengirola	EUR	217	
La Coruna	EUR	212	
Las Palmas de Gran Canaria	EUR	253	
Malaga	EUR	219	
Marbella	EUR	219	
Oviedo	EUR	189	
San Sebastian	EUR	201	
Santa Cruz de Tenerife	EUR	193	
Santander	EUR	229	
Santiago de Compostela	EUR	239	
Seville	EUR	224	
Valencia	EUR	204	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Vigo	EUR	207	
Zaragoza	EUR	300	All rates to be reduced by 10% for stay in any one city
[Others]	EUR	222	
Sri Lanka			
Colombo	LKR	43,063	
Ahungalla	LKR	21,923	
Bentota	LKR	19,052	
Chilaw	LKR	19,704	
Galle	LKR	28,186	
Kandy	LKR	32,101	
Trincomalee	LKR	30,144	
[Others]	LKR	19,835	
St Lucia			
Saint Lucia	XCD	970	
Sudan			
Khartoum	SDG	2,761	
[Others]	SDG	2,289	
Suriname			
Paramaribo	SRD	612	
[Others]	SRD	612	
Swaziland			
Mbabane	SZL	2,212	
[Others]	SZL	982	
Sweden			
Stockholm	SEK	3,110	
[Others]	SEK	3,110	
Switzerland			
Bern	CHF	440	
Basel	CHF	414	
Davos	CHF	445	
Geneva	CHF	475	
Klosters	CHF	447	
Lugano	CHF	422	
Montreux	CHF	484	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Zurich	CHF	440	
[Others]	CHF	381	All rates to be reduced by 10% for stay in any one city
Syria			
Damascus	SYP	55,642	
[Others]	SYP	55,642	
Tajikistan			
Dushanbe	TJS	1,625	
Khorog	TJS	1,280	
Kulob	TJS	775	
[Others]	TJS	775	
Tanzania			
Dar Es Salaam	TZS	517,757	
Arusha	TZS	402,142	
Morogoro	TZS	330,091	
Zanzibar	TZS	480,894	
[Others]	TZS	263,068	
Thailand			
Bangkok	THB	8,826	
Chiang Mai	THB	6,879	
Chiang Rai	THB	4,218	
Hat Yai	THB	4,218	
Hua Hin	THB	7,204	
Khao Lak	THB	9,118	
Krabi	THB	9,118	
Nong Khai	THB	3,440	
Pattaya City	THB	6,263	
Phuket	THB	9,118	
Samui Island	THB	7,528	
[Others]	THB	3,440	
The Gambia			
Banjul	GMD	8,433	
[Others]	GMD	2,653	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Timor-Leste			
Dili	USD	221	All rates to be reduced by 10% for stay in any one city
[Others]	USD	100	
Togo			
Lome	XOF	138,389	
Lama Kara	XOF	56,708	
Sokode	XOF	57,229	
[Others]	XOF	44,222	
Tokelau Islands			
Tokelau Islands	NZD	49	
Tonga			
Nukualofa	TOP	511	
[Others]	TOP	511	
Trinidad and Tobago			
Port of Spain	TTD	2,216	
Tobago	TTD	2,565	
[Others]	TTD	2,216	
Tunisia			
Tunis	TND	390	
Carthage	TND	390	
Gammarth	TND	390	
Jerba	TND	289	
Lamarsa	TND	390	
Tamerza	TND	326	
[Others]	TND	289	
Turkey			
Ankara	TRY	735	
Adana-Incirlik	TRY	605	
Antalya	TRY	646	
Aydin	TRY	603	
Bursa	TRY	594	
Elmadag	TRY	735	
Gaziantep City	TRY	523	
Istanbul	TRY	982	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Izmir-Cigli	TRY	646	
Manzarali	TRY	735	All rates to be
Nevsehir	TRY	532	reduced by 10%
Yamanlar	TRY	646	for stay in any one
[Others]	TRY	461	city
Turkmenistan			
Ashgabat	TMT	735	
[Others]	TMT	470	
Turks and Caicos Islands			
Turks and Caicos Islands	USD	291	
Tuvalu			
Tuvalu	AUD	223	
Uganda			
Kampala	UGX	900,743	
Entebbe	UGX	535,147	
Fort Portal	UGX	466,267	
Gulu	UGX	291,417	
Jinja	UGX	765,632	
Mbale	UGX	386,790	
[Others]	UGX	291,417	
Ukraine			
Kyiv	UAH	4,838	
Kharkiv	UAH	3,195	
[Others]	UAH	3,066	
United Arab Emirates			
Abu Dhabi	AED	1,976	
Dubai	AED	2,013	
[Others]	AED	1,976	
United Kingdom			
London	GBP	332	
Belfast	GBP	233	
Birmingham	GBP	183	
Bristol	GBP	224	
Cardiff, Wales	GBP	197	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Caversham	GBP	233	
Cheltenham	GBP	196	All rates to be reduced by 10% for stay in any one city
Crawley	GBP	332	
Edinburgh	GBP	219	
Gatwick	GBP	229	
Glasgow	GBP	195	
Harrogate	GBP	145	
High Wycombe	GBP	191	
Horley	GBP	229	
Liverpool	GBP	178	
Loudwater	GBP	188	
Manchester	GBP	206	
Menwith Hill	GBP	145	
Oxford	GBP	175	
Reading	GBP	233	
[Others]	GBP	168	
United States of America [Note]			
Alabama			
Montgomery	USD	165	
[Others]	USD	165	
Alaska			
Juneau	USD	307	
Anchorage	USD	286	
[Others]	USD	307	
American Samoa			
Pago Pago	USD	295	
[Others]	USD	295	
Arizona			
Phoenix	USD	228	
[Others]	USD	228	
Arkansas			
Little Rock	USD	188	
[Others]	USD	188	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
California			
Sacramento	USD	214	All rates to be reduced by 10% for stay in any one city
Anaheim	USD	268	
Berkeley	USD	238	
Los Angeles	USD	268	
Mojave Desert	USD	182	
San Diego	USD	274	
San Francisco	USD	390	
[Others]	USD	214	
Colorado			
Denver	USD	299	
Colorado Springs	USD	193	
[Others]	USD	299	
Connecticut			
Hartford	USD	222	
[Others]	USD	222	
Delaware			
Dover	USD	176	
[Others]	USD	176	
Florida			
Tallahassee	USD	179	
Daytona Beach	USD	180	
Miami	USD	285	
Orlando	USD	220	
Ormond Beach	USD	180	
Pensacola	USD	200	
[Others]	USD	179	
Georgia			
Atlanta	USD	249	
[Others]	USD	249	
Guam			
Hagatna	USD	311	
[Others]	USD	311	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Hawaii			
Honolulu	USD	364	All rates to be reduced by 10% for stay in any one city
[Others]	USD	364	
Idaho			
Boise	USD	165	
[Others]	USD	165	
Illinois			
Springfield	USD	183	
Chicago	USD	317	
[Others]	USD	183	
Indiana			
Indianapolis	USD	201	
[Others]	USD	201	
Iowa			
Des Moines	USD	190	
[Others]	USD	190	
Kansas			
Topeka	USD	165	
[Others]	USD	165	
Kentucky			
Frankfort	USD	165	
Lexington	USD	200	
Louisville	USD	220	
[Others]	USD	165	
Louisiana			
Baton Rouge	USD	190	
[Others]	USD	190	
Maine			
Augusta	USD	165	
[Others]	USD	165	
Maryland			
Annapolis	USD	220	
Baltimore	USD	275	
[Others]	USD	220	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Massachusetts			
Boston	USD	371	All rates to be reduced by 10% for stay in any one city
Marlborough	USD	252	
[Others]	USD	371	
Michigan			
Lansing	USD	181	
Detroit	USD	212	
[Others]	USD	181	
Minnesota			
St. Paul	USD	264	
Minneapolis	USD	264	
Rochester	USD	211	
[Others]	USD	264	
Mississippi			
Jackson	USD	165	
[Others]	USD	165	
Missouri			
Jefferson City	USD	165	
Guam	USD	165	
[Others]	USD	165	
Montana			
Helena	USD	183	
Big Sky	USD	202	
[Others]	USD	183	
Nebraska			
Lincoln	USD	165	
Omaha	USD	207	
[Others]	USD	165	
Nevada			
Carson City	USD	185	
Clark County	USD	208	
Las Vegas	USD	208	
[Others]	USD	185	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
New Hampshire			
Concord	USD	177	All rates to be reduced by 10% for stay in any one city
[Others]	USD	177	
New Jersey			
Trenton	USD	242	
Atlantic City	USD	200	
[Others]	USD	242	
New Mexico			
Santa Fe	USD	205	
[Others]	USD	205	
New York State			
Albany	USD	220	
Ithaca	USD	210	
New York	USD	447	
[Others]	USD	220	
North Carolina			
Raleigh	USD	206	
Charlotte	USD	208	
[Others]	USD	206	
North Dakota			
Bismarck	USD	165	
[Others]	USD	165	
Northern Mariana Islands			
Saipan	USD	296	
[Others]	USD	296	
Ohio			
Columbus	USD	207	
[Others]	USD	207	
Oklahoma			
Oklahoma City	USD	200	
[Others]	USD	200	
Oregon			
Salem	USD	165	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Portland	USD	262	
[Others]	USD	165	All rates to be reduced by 10% for stay in any one city
Pennsylvania			
Harrisburg	USD	205	
Philadelphia	USD	290	
Pittsburgh	USD	254	
[Others]	USD	205	
Puerto Rico			
San Juan	USD	407	
[Others]	USD	407	
Rhode Island			
Providence	USD	258	
[Others]	USD	258	
South Carolina			
Columbia	USD	185	
[Others]	USD	185	
South Dakota			
Pierre	USD	165	
[Others]	USD	165	
Tennessee			
Nashville	USD	253	
[Others]	USD	253	
Texas			
Austin	USD	257	
Dallas	USD	254	
Houston	USD	254	
San Antonio	USD	230	
[Others]	USD	257	
Utah			
Salt Lake City	USD	217	
[Others]	USD	217	
Vermont			
Montpelier	USD	218	
[Others]	USD	218	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Virgin Islands			
Charlotte Amalie	USD	478	All rates to be reduced by 10% for stay in any one city
[Others]	USD	478	
Virginia			
Richmond	USD	227	
[Others]	USD	227	
Washington DC	USD	355	
Washington State			
Olympia	USD	201	
Fort Lewis	USD	217	
Seattle	USD	307	
[Others]	USD	201	
West Virginia			
Charleston	USD	201	
[Others]	USD	201	
Wisconsin			
Madison	USD	199	
Milwaukee	USD	214	
[Others]	USD	199	
Wyoming			
Cheyenne	USD	165	
[Others]	USD	165	
Uruguay			
Montevideo	UYU	6,242	
Colonia	UYU	6,564	
Punta del Este	UYU	8,743	
[Others]	UYU	6,242	
Uzbekistan			
Tashkent	UZS	662,625	
[Others]	UZS	337,250	
Vanuatu			
Port Vila	VUV	35,799	
Santos	VUV	26,555	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Tanna Island	VUV	35,013	
[Others]	VUV	3,246	All rates to be reduced by 10% for stay in any one city
Venezuela			
Caracas	VEF	3,623	
Barquisimeto	VEF	3,541	
Maracaibo	VEF	3,548	
Porlamar	VEF	3,447	
Puerto La Cruz	VEF	3,050	
Puerto Ordaz	VEF	3,144	
Punto Fijo	VEF	2,974	
San Cristobal	VEF	3,440	
Valencia	VEF	3,182	
[Others]	VEF	3,050	
Vietnam			
Hanoi	VND	5,899,452	
Dalat	VND	5,177,936	
Danang	VND	5,114,273	
Ho Chi Minh City	VND	6,493,641	
[Others]	VND	4,392,757	
Virgin Islands, British			
Virgin Islands, British	USD	258	
Wallis and Futuna			
Wallis and Futuna	XPF	12,970	
Yemen			
Sanaa	YER	97,853	
Aden	YER	47,744	
[Others]	YER	37,206	
Zambia			
Lusaka	ZMW	1,783	
Livingstone	ZMW	2,121	
[Others]	ZMW	1,095	
Zimbabwe			
Harare	USD	334	
Bulawayo	USD	212	

Annex 4.10

Country / City	Currency	First 28 nights	Thereafter
Victoria Falls	USD	411	
[Others]	USD	177	All rates to be reduced by 10% for stay in any one city
Other Foreign Localities			
Other Foreign Localities	USD	55	

Note

Hotel accommodation-related taxes are not included in the rates of subsistence allowance for the destinations in the United States of America (USA). Hotel accommodation-related taxes paid during duty visits in the USA should be reimbursed on an "actual-expenses" basis under CSR 714(1) if they are paid for by the officer concerned.

Part VII - Annex 13 - Endurance and Performance Test

Date of Test:		Place of Test:	
Vessel's Identification:		Vessel's Name:	
Conditions at Endurance and Performance Test			
Person Onboard	**6 Persons**	Dummy Weight	
Fuel (Diesel)	**75% of Endurance Range Capacity**	Other Equipment	**100 kg**
Sea Conditions	**Calm sea with wind speed below 6 knots / maximum wave height of less than 0.5 m / Sea Water Depth not less than 5 meters**		

Engines:	**Port Side**	**Starboard Side**	**Propellers:**	**Port Side**	**Starboard Side**
Maker			Maker		
Type			Type		
Serial Number			Diameter		
Rated Power			Pitch		
Rated Speed			Direction of		

Engine Load	**Engine Speed (rpm)**	**Vessel Speed (Knots)**	**Time (Start)**	**Time (Finish)**	**Fuel Consumption (litres/mintue)**	**Engine Oil Pressure (Bar)**	**Engine (in) CW Temp. (^{o}C)**	**Others**	**Others**
__% of rated Power	At Minimum Crusing Speed		Not less 15 mintues						
50% of Rated Power			Not less 15 mintues						
60% of Rated Power			Not less 15 mintues						
70% of Rated Power			Not less 15 mintues						
80% of Rated Power			Not less 15 mintues						
90% of Rated Power			Not less 15 mintues						
100% of Rated Power (Endurance Test)			Not less 120 mintues or 120 min/3 to be discussed with Immigration Dept.						

Remarks:

Witness by:	MD Representative	Shipyard Representative

Annex 14: As-fitted Drawings and Machinery/Equipment documents and information literature to be delivered to the Government after Delivery Acceptance

1. **As-Fitted Drawings**

1.1 After the Vessel is delivered to the Government the Contractor shall deliver to the Government within two (2) calendar months four (4) hard copies and two (2) soft-copies of the following plans and drawings that contain the technical information of the Vessel and its machinery and equipment as they are when the Vessel is on the day accepted by the MD. These are termed the final version of the "As-Fitted" Plans and Drawings, and they must consist of the following ones as well as any other additional ones that may be required by GNC/MD during the design and construction of the Vessel and before the Vessel is accepted by the Government.

1.2 The As–Fitted Plans and Drawings shall be prepared by professional ship draughtsmen and they shall be prepared in a professional manner, scale, size and style normally required of in the ship design and construction business sector. All plans and drawings shall show and be clearly marked for the profile, plan, and section views of the layout, arrangement details, and construction details in a manner required by GNC officer.

1.2.1 General Arrangement Plan

1.2.2 Lines Plan and Offsets Data and table.

1.2.3 Stability information booklet and the inclining experiment report.

1.2.4 Hydrostatics, Cross Curves and intact and damage stability calculations for all ship loading conditions specified in the Technical Specifications.

1.2.5 Vessel Subdivision Drawings and stability calculations.

1.2.6 Painting scheme of the whole vessel.

1.2.7 Vessel draught marking diagram.

1.2.8 Detailed Arrangement and Layout Plan of the Wheelhouse, Cabins, Decks showing the disposition of all main equipment, fittings and fixtures, furniture, doors, windows, hatches, manholes and access openings. The Down-Flooding openings (points) shall be clearing indicated on the drawings.

1.2.9 Equipment layout diagram.

1.2.10 Hull Structural Construction and Hull Scantlings drawings.

1.2.11 Hull Shell and Frames and the Framings Arrangement and Construction Plan.

1.2.12 Hull Shell Expansion Plan.

1.2.13 Keel Construction plan.

1.2.14 Steering system and steering arrangement diagrams.

1.2.15 Superstructures and Deck Structural and Construction Plan.

1.2.16 Hull Watertight Bulkheads Construction Plan.

1.2.17 Superstructures to deck connection detailed construction plan.

1.2.18 Deck Edge and Bulwark (if any) details and construction plan, including detailed structural arrangement drawings of hull to deck connection.

1.2.19 Detailed Cathodic corrosion prevention and arrangement plans and drawings for the Vessel throughout.

1.2.20 Mast structural and construction Plan and Mast Equipment Arrangement Plan.

1.2.21 Anchoring Arrangement Plan.

1.2.22 Piping diagrams for fuel oil, freshwater, lubrication oil, bilge, firefighting, scuppers and drains, sewage system.

1.2.23 Fire Prevention, Fire Control and Firefighting System drawings.

1.2.24 Drawings of the main switchboard and all other switchboards and the electrical system.

1.2.25 wheelhouse and cabin sound and heat insulation system diagram.

1.2.26 Main engines and generator sets arrangement and sitting plans and drawings of their fuel lines and exhaust gas piping and arrangement.

1.2.27 Vessel ventilation drawings for the Wheelhouse, Cabins and other spaces.

1.2.28 Main fuel oil tank drawing and its associated piping and manifold(s), and filling, overflow and ventilation system.

1.2.29 Freshwater tank and its associated piping arrangement.

1.2.30 Fuel oil tank(s) and its associated piping system

1.2.31 Drawings for anchor, windlass and the anchoring system.

1.2.32 Life-saving appliance arrangement plan and Fire Safety Plan.

1.2.33 Distress signals, alarm systems, and internal/external communication arrangement and system plan.

1.2.34 Navigational lights, sound and signal diagrams and any other external lighting arrangement plan.

1.2.35 Vessel overall lighting arrangement and light control plan.

1.2.36 Vessel alarm and signals, internal communication systems and public address systems plan.

1.2.37 General Layout and Arrangement drawing of the air-conditioning system.

1.2.38 Refrigerant Piping Layout drawing of the air-conditioning system.

1.2.39 Air-conditioning Load calculation.

Documents to be provided by the Contractor

In not less than one (1) month before the Delivery Acceptance of the Vessel, the Contractor shall provide GNC/MD for GNC acceptance a list of all documents to be provided.

When the Vessel is delivered to the Government Dockyard the Contractor shall deliver to the Government all the technical information, leaflets, literature, manuals and booklets etc. and whatsoever items that are necessary for the operation, handling, services, maintenance, spare parts, repairs and the technical understanding of any one of all the engines, machinery, motors, pumps, equipment, fittings and outfitting items of the Vessel.

Part VII

Appendix A - Conceptual Block Diagram of Electronic Equipment