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PART 1 - GENERAL INFORMATION

1.1 Introduction

The Request for Supply Arrangements (RFSA) is divided into six parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Supplier Instructions: provides the instructions applicable to the clauses and conditions of the RFSA;
- Part 3 Arrangement Preparation Instructions: provides Suppliers with instructions on how to prepare the arrangement to address the evaluation criteria specified;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria which must be addressed in the arrangement and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided; and
- Part 6 6A, Supply Arrangement, 6B, Bid Solicitation, and 6C, Resulting Contract Clauses:
 - 6A, includes the Supply Arrangement (SA) with the applicable clauses and conditions;
 - 6B, includes the instructions for the bid solicitation process within the scope of the SA;
 - 6C, includes general information for the conditions which will apply to any contract entered into pursuant to the SA.

The annexes include the Statement of Requirement, Technical Evaluation Plan and any other annexes.

1.2 Summary

- 1.2.1 Public Services and Procurement Canada has a requirement, to establish a list of pre-qualified suppliers that will be used by the Halifax office of PSPC to permit processing of individual bid solicitations and award subsequent contracts for Technical Investigation and Engineering Services on behalf of Transport Canada Air and Marine Programs, in Eastern Canada.

Public Services and Procurement Canada reserves the right to use the vendor list created as a result of this Supply Arrangement in support of any government department, agency or Crown Corporation listed in Schedules I, I.1, II, III, of the *Financial Administration Act*, R.S., 1985, c. F-11, within Eastern Canada with the exception of Department of Fisheries and Oceans / Canadian Coast Guard.

An SA is not a contract for the provision of the goods and services described in it and neither party is legally bound, as a result of signing a supply arrangement alone. The intent of a supply arrangement is to establish a framework to permit expeditious processing of individual bid solicitations, which result in legally binding contracts for the goods and services described in those bid solicitations.

The following eight (8) areas of expertise are required:

- a) Naval Architecture
- b) Marine Engineering
- c) Navigation and Ship Keeping
- d) Health and Safety Services
- e) Management Systems Auditing
- f) Environmental Services: Vessel Based
- g) Marine Communication & Navigation Systems: Vessel Based
- h) Marine Informatics Technology

1.2.2 The Supply Arrangement has no defined end-date and will remain valid until such time as Canada no longer considers it to be advantageous to use it.

1.2.3 This procurement is exempt from the North American Free Trade Agreement (NAFTA) - exemption reference: Chapter 10, Annex 1001.2b, General Notes, Schedule of Canada - paragraph 1(a). It is also exempt from the World Trade Organization - Agreement on Government Procurement (WTO-AGP) - exemption reference: Annex 4, Note 4

1.3 Canadian Content

The goods and/or services covered by the Supply Arrangement may be limited to Canadian goods and/or services as defined in clause [A3050T](#).

SACC Manual clause [A3050T](#) (2014-11-27) Canadian Content Definition

1.4 Debriefings

Suppliers may request a debriefing on the results of the request for supply arrangements process. Suppliers should make the request to the Supply Arrangement Authority within 15 working days of receipt of the results of the request for supply arrangements process. The debriefing may be in writing, by telephone or in person.

PART 2 - SUPPLIER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the Request for Supply Arrangements (RFSA) by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Services and Procurement Canada.

Suppliers who submit an arrangement agree to be bound by the instructions, clauses and conditions of the RFSA and accept the clauses and conditions of the Supply Arrangement and resulting contract(s).

The [2008](#) (2016-04-04) Standard Instructions - Request for Supply Arrangements - Goods or Services, are incorporated by reference into and form part of the RFSA.

2.2 Submission of Arrangements

Arrangements must be submitted only to Procurement Services and Procurement Canada (PSPC) Bid Receiving Unit by the date, time and place indicated on page 1 of the Request for Supply Arrangements.

Due to the nature of the Request for Supply Arrangements, transmission of arrangements by facsimile to PSPC will not be accepted.

2.3 Former Public Servant - Notification

Service contracts awarded to former public servants in receipt of a pension or a lump sum payment must bear the closest public scrutiny and reflect fairness in the spending of public funds. Therefore, the bid solicitation will require that you provide information that, were you to be the successful bidder, your status with respect to being a former public servant in receipt of a pension or a lump sum payment, will be required to report this information on the departmental websites as part of the published proactive disclosure reports generated in accordance with Treasury Board policies and directives on contracts with former public servants, [Contracting Policy Notice 2012-2](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

2.4 Federal Contractors Program for Employment Equity - Notification

The Federal Contractors Program (FCP) for employment equity requires that some contractors make a formal commitment to Employment and Social Development Canada (ESDC) - Labour to implement employment equity. In the event that this Supply Arrangement would lead to a contract subject to the Federal Contractors Program (FCP) for employment equity, the bid solicitation and resulting contract templates would include such specific requirements. Further information on the Federal Contractors Program (FCP) for employment equity can be found on [Employment and Social Development Canada \(ESDC\) - Labour's](#) website.

2.5 Enquiries - Request for Supply Arrangements

All enquiries must be submitted in writing to the Supply Arrangement Authority no later than five (5) calendar days before the Request for Supply Arrangements (RFSAs) closing date. Enquiries received after that time may not be answered.

Suppliers should reference as accurately as possible the numbered item of the RFSAs to which the enquiry relates. Care should be taken by Suppliers to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that Suppliers do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all Suppliers. Enquiries not submitted in a form that can be distributed to all Suppliers may not be answered by Canada.

2.6 Applicable Laws

The Supply Arrangement (SA) and any contract awarded under the SA must be interpreted and governed, and the relations between the parties determined, by the laws in force in Nova Scotia.

Suppliers may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of the arrangement, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Suppliers.

PART 3 - ARRANGEMENT PREPARATION INSTRUCTIONS

3.1 Arrangement Preparation Instructions

Canada requests that Suppliers provide the arrangement in separately bound sections as follows:

Section I: Technical Arrangement (2 hard copies and 2 soft copies on CD)

Section II: Not Used

Section III: Certifications (1 hard copy)

Section IV: Not Used

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the financial arrangement only. No prices must be indicated in any other section of the arrangement.

Canada requests that Suppliers follow the format instructions described below in the preparation of the arrangement.

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to that of the Request for Supply Arrangements.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, Suppliers should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Technical Arrangement

In the technical arrangement, Suppliers should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

Section II: Not Used

Section III: Certifications

Suppliers must submit the certifications and additional information required under Part 5.

Section IV: Not Used

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Arrangements will be assessed in accordance with the entire requirement of the Request for Supply Arrangements including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the arrangements.

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria

Arrangements will be evaluated to determine their compliance with the mandatory requirements, as detailed in Annex "A." Statement of Requirement and Annex "B", Technical Evaluation Plan.

Arrangements not meeting the mandatory requirements will be given no further consideration and will be declared non-responsive.

4.1.1.2 Point Rated Technical Criteria

The Point Rated Technical Criteria are listed in Annex "B" Technical Evaluation Plan.

Suppliers are instructed to address each requirement in sufficient depth as to permit a complete analysis and assessment by the evaluation team, including documentation requirements. Suppliers **MUST** demonstrate their ability to meet all of the mandatory and point rated requirements.

Only arrangements including sufficient documentation to clearly indicate compliance with the mandatory and point rated requirements will be considered for any resulting SAs.

4.2 Basis of Selection

An arrangement must comply with the requirements of the Request for Supply Arrangements and meet all mandatory and rated criteria of Annex "B" to be declared responsive.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Suppliers must provide the required certifications and additional information to be issued a supply arrangement (SA).

The certifications provided by Suppliers to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare an arrangement non-responsive, or will declare a contractor in default if any certification made by the Supplier is found to be untrue, whether made knowingly or unknowingly, during the arrangement evaluation period or during the period of any supply arrangement arising from this RFSA and any resulting contracts.

The Supply Arrangement Authority will have the right to ask for additional information to verify the Supplier's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Supply Arrangement Authority will render the arrangement non-responsive, or constitute a default under the Contract.

5.1 Certifications Required with the Arrangement

Suppliers must submit the following duly completed certifications as part of their arrangement.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the *Ineligibility and Suspension Policy* (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Supplier must provide with its arrangement the required documentation, as applicable), to be given further consideration in the procurement process.

5.2 Certifications Precedent to the Issuance of a Supply Arrangement and Additional Information

The certifications and additional information listed below should be submitted with the arrangement, but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Supply Arrangement Authority will inform the Supplier of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame provided will render the arrangement non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Supplier must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Additional Certifications Precedent to Issuance of a Supply Arrangement

5.2.2.1 Education and Experience

5.2.2.2.1 SACC Manual clause [S1010T](#) (2008-12-12) Education and Experience

5.2.2.2 Canadian Content Definition

5.2.2.2.2 SACC Manual clause [A3050T](#) (2014-11-27) Canadian Content Definition

5.2.2.3 Status and Availability of Resources

5.2.2.3.1 SACC Manual clause [S3005T](#) (2008-12-12) Status and Availability of Resources

PART 6 - SUPPLY ARRANGEMENT AND RESULTING CONTRACT CLAUSES

A. SUPPLY ARRANGEMENT

6.1 Arrangement

The Supply Arrangement establishes a list of pre-qualified suppliers that will be used by PSPC to permit expeditious processing of individual bid solicitations in accordance with the Statement of Requirement at Annex "A".

6.2 Security Requirements

6.2.1 There is no security requirement applicable to the Supply Arrangement.

6.3 Standard Clauses and Conditions

All clauses and conditions identified in the Supply Arrangement and resulting contract(s) by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Services and Procurement Canada.

6.3.1 General Conditions

[2020](#) (2016-04-04) General Conditions - Supply Arrangement - Goods or Services, apply to and form part of the Supply Arrangement.

6.4 Term of Supply Arrangement

6.4.1 Period of the Supply Arrangement

The Supply Arrangement has no defined end-date and will remain valid until such time as Canada no longer considers it to be advantageous to use it.

The period for awarding contracts under the Supply Arrangement is estimated to begin on November 1, 2016.

6.5 Authorities

6.5.1 Supply Arrangement Authority

The Supply Arrangement Authority is:

Rachelle LaBrash
Supply Specialist
Public Services and Procurement Canada
Acquisitions, Marine
1713 Bedford Row,
Halifax, Nova Scotia

Telephone: (902) 496-5115
Facsimile: (902) 496-5016
E-mail address: Rachelle.LaBrash@pwgsc-tpsgc.gc.ca

The Supply Arrangement Authority is responsible for the issuance of the Supply Arrangement, its administration and its revision, if applicable.

6.6 Identified Users

The Identified User is the Supply Arrangement Authority at Public Services and Procurement Canada.

Only the identified user is authorized to issue contracts.

6.7 On-going Opportunity for Qualification

A Request for Supply Arrangements will be issued in accordance with the process set out below to allow new Suppliers to become qualified. Existing qualified Suppliers, who have been issued a supply arrangement, will not be required to submit a new arrangement.

New potential suppliers are to contact the Supply Arrangement Authority by telephone or email. These suppliers will be provided with the necessary information and documentation to be evaluated using the same guidelines and evaluation criteria as existing qualified Suppliers.

6.8 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the articles of the Supply Arrangement;
- (b) the general conditions 2020 (2016-04-04), General Conditions - Supply Arrangement - Goods or Services
- (c) Annex A, Statement of Requirement;
- (d) Annex B, Technical Evaluation Plan;
- (e) the Supplier's arrangement dated _____

6.9 Certifications and Additional Information

6.9.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Supplier in its arrangement or precedent to issuance of the Supply Arrangement (SA), and the ongoing cooperation in providing additional information are conditions of issuance of the SA and failure to comply will constitute the Supplier in default. Certifications are subject to verification by Canada during the entire period of the SA and of any resulting contract that would continue beyond the period of the SA.

6.10 Applicable Laws

The Supply Arrangement (SA) and any contract resulting from the SA must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____.

B. BID SOLICITATION

6.1 Bid Solicitation Documents

Canada will use the following bid solicitation templates based on the estimated dollar value and complexity of the requirement:

- Simple, for low dollar value requirements;
- Medium Complexity (MC) for medium complexity requirements;

A copy of the template(s) can be provided upon request by contacting the Procurement Process Tools Division by sending a query to TPSGC.Outilsdapprovisionnement-ProcurementTools.PWGSC@tpsgc-pwgsc.gc.ca.

Note: References to the HC, MC and Simple templates in PSPC Requests for Supply Arrangements are provided as examples only. The latest versions of the template and terms and conditions will be used at time of bid solicitation.

The bid solicitation will contain as a minimum the following:

- (a) a complete description of the Work to be performed;
- (b) [2003](#), Standard Instructions - Goods or Services - Competitive Requirements;

Subsection 3.a) of Section 01, Integrity Provisions - Bid of the Standard Instructions [2003](#) incorporated by reference above is deleted in its entirety and replaced with the following:

- a. at the time of submitting an arrangement under the Request for Supply Arrangements (RFSA), the Bidder has already provided a list of names, as requested under the [Ineligibility and Suspension Policy](#). During this procurement process, the Bidder must immediately inform Canada in writing of any changes affecting the list of directors.”
- (c) bid preparation instructions;
- (d) instructions for the submission of bids (address for submission of bids, bid closing date and time);
- (e) evaluation procedures and basis of selection;
- (f) certifications;
 - **Federal Contractors Program (FCP) for Employment Equity - Notification**
 - **Integrity Provisions - Declaration of Convicted Offences;**

(g) conditions of the resulting contract.

6.2 Bid Solicitation Process

6.2.1 Bids will be solicited for specific requirements within the scope of the Supply Arrangement (SA) from Suppliers who have been issued a SA. Bids will only be solicited from those suppliers who have qualified within the particular Area of Expertise for which they were evaluated.

6.2.2 The bid solicitation will be sent directly to Suppliers by the SA Authority.

C. RESULTING CONTRACT CLAUSES

6.1 General

The conditions of any contract awarded under the Supply Arrangement will be in accordance with the resulting contract clauses of the template used for the bid solicitation.

For any contract to be awarded using the template:

(a) **Simple** (for low dollar value requirements), general conditions [2029](#) will apply to the resulting contract;

(b) **MC** (for medium complexity requirements), general conditions 2030 will apply to the resulting contract;

A copy of the template(s) can be provided upon request by contacting the Procurement Process Tools Division by sending a query to TPSGC.Outilsdapprovisionnement-ProcurementTools.PWGSC@tpsgc-pwgsc.gc.ca.

Note: References to the HC, MC and Simple templates in PSPC Requests for Supply Arrangements are provided as examples only. The latest versions of the template and terms and conditions will be used at time of bid solicitation.

ANNEX A
Technical Investigation and Engineering Support (TIES)
Statement of Requirement

1. Purpose

- 1.1 This Statement of Requirement outlines the capability and nature of work required to assist Transport Canada Air and Marine Programs in the capital works performed on vessels owned by the Minister of Transport. Public Services and Procurement Canada reserves the right to use the vendor list created as a result of this Supply Arrangement in support of any government department, agency or Crown Corporation listed in Schedules I, I.1, II, III, of the Financial Administration Act, R.S., 1985, c. F-11, within Eastern Canada with the exception of the Department of Fisheries and Oceans / Canadian Coast Guard.
- 1.2 The Supply Arrangement (SA) will be used for contracting with firms and organisations with extensive marine related experience for relatively minor assignments and project tasks related to capital work, which are more expeditiously handled through the TIES. Major assignments and projects will continue to be handled through traditional individual contracts. The operation and ongoing maintenance of the assets will continue to be managed by the individual operators of the vessels.

2. Scope

- 2.1 Each Qualified Supplier shall, either directly or through subcontractor or associates, provide all necessary practical expertise to carry out the tasks. The Supplier is to assign the necessary types and numbers of personnel at agreed upon Occupational Levels, with experience and ability to understand the task quickly, in order to formulate and carry through an effective program, while utilizing the best available data and technology. All tasks assigned will be in accordance with the priorities established by Transport Canada.
- 2.2 This Statement of Requirement (SOR) details the Areas of Expertise (Section 4.0), the Types of Work (Section 5.0), and the Occupational Levels (Section 6.0) required to assist Transport Canada Air and Marine Programs with Technical Investigation and Engineering Support (TIES) for the vessels owned by the Minister of Transport.

3. Background

- 3.1 Transport Canada (TC) provides support to private sector operators for three interprovincial ferry services in Eastern Canada, including the ferry service from Saint John, NB to Digby, NS; Caribou N.S. to PEI; and Cap Aux Meules, QUE and Souris PEI. A given task could take place in any one, many, or all regions, as such, travel may be required. At the time of writing of this document the current fleet owned by the Minister is comprised of the following vessels:

- MV Fundy Rose – Operated by Bay Ferries Limited
- MV Confederation – Operated by Northumberland Ferries Limited
- MV Holiday Island – Operated by Northumberland Ferries Limited
- MV Madeleine – Operated by CTMA
- MV Princess of Acadia – Decommissioned

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- 3.2 Transport Canada owns both the ferry facilities and the vessels used to provide these services and is responsible for providing capital support toward these assets. However, the day to day operation and ongoing maintenance of the vessels and ferry facilities is the responsibility of the operator.
- 3.3 The operators undertake the majority of the maintenance that is demanded by the operation of these assets.
- 3.4 Transport Canada undertakes work and/or occasional improvements to extend the longevity or improve the asset.
- 3.5 The vessels require periodic independent inspections to verify the condition, and identify maintenance and work that should be undertaken to decrease operating costs, prolong the vessel's useful life, and maintain the asset to an acceptable standard as defined by the owner.
- 3.6 The assets have ongoing requirements that involve extensive marine engineering, electrical and electronic engineering, naval architecture work, mechanical engineering, health and safety, and environment assessment respect to all activities during the four phases of the assets' life cycle: Conception, Acquisition, In-Service and Disposal.
- 3.7 In support of the oversight and management of the contribution agreements and stewardship of the assets the department requires expert services from external suppliers in any one or a combination of engineering, life cycle management, and technical investigation and reporting. There is very limited expertise within the department to undertake the magnitude of work required, and the flexibility of utilizing additional expert services from outside sources is of great advantage in managing the vessel assets effectively and efficiently.
- 3.8 The vessels owned by the Minister are Ro-Ro passenger vessels of differing sizes and capacities. The specifics of each of the vessels is contained within Annex A. The aging fleet is continuously in need of new technology upgrades, refit, and life extension to ensure sound stewardship of the assets.

4. Areas of Expertise

The Areas of Expertise required by Transport Canada under TIES include the following eight (8) lettered areas.

- a) Naval Architecture
- b) Marine Engineering
- c) Navigation and Ship Keeping
- d) Health and Safety Services
- e) Management Systems Auditing
- f) Environmental Services: Vessel Based
- g) Marine Communication & Navigation Systems: Vessel Based
- h) Marine Informatics Technology

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Each area is further described by a list of Fields of Specialty below. The lists provided are not exhaustive.

- 4.1 Naval Architecture
 - 4.1.1 Ship hull structure, structural arrangement and strength, vibration and passive fire protection;
 - 4.1.2 Ship design, construction, modernization and repair;
 - 4.1.3 Propulsion, rudders, propellers and steering system design;
 - 4.1.4 Vessel stability, open water and ice;
 - 4.1.5 Hull systems including areas such as accommodation outfit, launch and recovery systems, doors and closures, closing appliances, corrosion control, etc.;
 - 4.1.6 Materials and materials maintenance as applied to the construction of ship's hull and outfit systems, paint coatings;
 - 4.1.7 Ship condition surveys and advice;
 - 4.1.8 Canadian acts, regulations, international conventions, codes and Classification society rules pertaining to the design, construction and operation of ships in all Voyage Classes and ASPPR types and classes;
 - 4.1.9 Design standards and classification rules as they may apply to Ro-Ro passenger vessels;
 - 4.1.10 Ship structure, design and analysis, advanced structure analysis techniques;
 - 4.1.11 Manoeuvring; Open water and ice;
 - 4.1.12 Sea keeping and towing;
 - 4.1.13 Cargo gear/ lifting systems;
 - 4.1.14 Anchor and mooring gear.

- 4.2 Marine Engineering
 - 4.2.1 Diesel Prime mover;
 - 4.2.2 Electrical generation and distribution (propulsion and ship service);
 - 4.2.3 Manoeuvring (thrusters, azimuthing drives, etc);
 - 4.2.4 Propulsion controls and instrumentation, alarm and monitoring;
 - 4.2.5 Propeller pitch control, shafting, reduction gear and pod propulsion;
 - 4.2.6 Steering gear;
 - 4.2.7 Ship condition survey and advice
 - 4.2.8 Fire protection systems;
 - 4.2.9 Auxiliary and Domestic Systems (refrigeration, hydraulic, compressor, purifier, potable, waste water, HVAC, etc);
 - 4.2.10 Pumps, Valves and piping system;
 - 4.2.11 Deck machinery and cargo equipment;
 - 4.2.12 Vibration and stress analysis;
 - 4.2.13 Waterborne Noise Management (ICES and others).
 - 4.2.14 Maintenance Management; including: maintenance requirements analysis and planning using accepted methodologies; predictive maintenance programs;
 - 4.2.15 The management of Life Cycle Management activities in one of the life cycle management phases (conception, acquisition, in-service and disposal) for assets.

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- 4.3 Navigation and Ship Keeping
 - 4.3.1 Ship design, construction, modernization and repair;
 - 4.3.2 Passive and active fire protection systems operations and maintenance.
 - 4.3.3 Propulsion, rudders, propellers and steering system operation;
 - 4.3.4 Vessel navigation and stability, open water and ice;
 - 4.3.5 Hull systems including areas such as accommodation outfit, launch and recovery systems, doors and closures, closing appliances, corrosion control, etc.;
 - 4.3.6 Materials and materials maintenance as applied to the maintenance of ship's hull and outfit systems, paint coatings;
 - 4.3.7 Ship condition surveys and advice;
 - 4.3.8 Canadian acts, regulations, international conventions, codes and Classification society rules pertaining to the design, construction and operation of ships in all Voyage Classes;
 - 4.3.9 Sea keeping;
 - 4.3.10 Deck machinery, cargo equipment, lifting systems, tackle maintenance;
 - 4.3.11 Vessel Navigation and communication equipment required for unlimited and restricted navigation
 - 4.3.12 Passenger Safety Management
 - 4.3.13 Maintenance Management; including: maintenance requirements analysis and planning using accepted methodologies; predictive maintenance programs;
- 4.4 Health and Safety Services
 - 4.4.1 Marine Occupational Health and Safety expertise;
 - 4.4.2 Human factors, ergonomics, biomechanics;
 - 4.4.3 Compliance audit experience;
 - 4.4.4 Industrial hygiene assessments or services.
 - 4.4.5 Technical Training Management: Expertise in the following areas of course development: Asynchronous and synchronous communication (E-Learning); task analysis; terminal and enabling objectives; criterion tests; development and design of review tests; identifying training requirements and course schedules; development and design for evaluation of technical training.
- 4.5 Management Systems Auditing
 - 4.5.1 Safety and environmental compliance assessments in the marine industry
 - 4.5.2 Planning, preparation, performance, recording, reporting and follow-up of audits
 - 4.5.3 Principles and best practices of harmonized audits and verifications
 - 4.5.4 Handling of non-conformities including root cause analysis and corrective actions
- 4.6 Environmental Services: Vessel
 - 4.6.1 Applicable National and International Environmental Laws and Regulations (Canadian Environmental Protection Act, Canadian Standards Association, International Maritime Organization etc.);
 - 4.6.2 Coating application, inspection, and certification;
 - 4.6.3 Environmental Management Framework (Carbon footprint, environmental loading assessment);

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- 4.6.4 Emissions and Fuels (e.g. low sulphur, bio-fuels);
 - 4.6.5 Environmental sensors (e.g. anemometers, humidity);
 - 4.6.6 Hazardous materials and substances (e.g. heavy metals, asbestos);
 - 4.6.7 Compliance audit experience.
 - 4.6.8 Inventory of Hazardous Material
- 4.7 Marine Communication & Navigation Systems: Vessel Based
- 4.7.1 Radio Communications and Direction Finder Systems: VHF/HF/MF Communication (AM/FM Transmitters, Receivers, Transceivers), Secure Radios, Digital Selective Calling (DSC) systems, Satellite communications systems;
 - 4.7.2 Situational Awareness and Position Reporting Systems: Automatic Identification (AIS), Long Range Identification and Tracking (LRIT), GPS/DGPS Systems, Radar, Electronic Chart Systems;
 - 4.7.3 Antennae and filtering (tuning);
 - 4.7.4 Marine Communications: Telecommunication systems, Cellular Phones, Integrated Communication Systems;
 - 4.7.5 Digital techniques including voice digitization, compression, multiplexing and switching;
 - 4.7.6 Meteorological Systems: Navtex (Meteorological info in text form), Fax (weather), Ice imagery;
 - 4.7.7 Instrumentation and Monitoring Systems;
 - 4.7.8 Uninterruptible Power Supplies (UPS);
 - 4.7.9 Integrated Navigation Systems;
 - 4.7.10 Gyrocompass;
 - 4.7.11 Safety of Life at Sea (SOLAS) requirements: Emergency Position Indicating Radio Beacons (EPIRBs), Global Maritime Distress and Safety Systems (GMDSS);
 - 4.7.12 Autopilot systems.
- 4.8 Marine Informatics Technology
- 4.8.1 Voice, data, and universal communications networks;
 - 4.8.2 Computer systems (hardware, software and related technologies);
 - 4.8.3 Emerging telecommunications and information technologies and their application;
 - 4.8.4 Telecommunication services and their respective regulatory environment and standards;
 - 4.8.5 WAN / Satellite / Carrier service procurement;
 - 4.8.6 Information Systems Standards;
 - 4.8.7 Networks (wired and wireless), hardware, software, power, cooling, monitoring, security and management;
 - 4.8.8 Remote patch management over unreliable connectivity;
 - 4.8.9 Network design best practices;
 - 4.8.10 Communications Control Systems (CCS);
 - 4.8.11 Remote monitoring and maintenance;
 - 4.8.12 Technical database administration;
 - 4.8.13 Custom programs and applications;
 - 4.8.14 IT security;
 - 4.8.15 Disaster Recovery and Business Continuity.

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5. Types of Work

The following section describes the types of work that need to be performed to assist Transport Canada in technical investigations and engineering tasks. Examples of tasks are included in each section. The lists provided are not exhaustive.

5.1 Policies and Standards Development

- 5.1.1 Developing inter- and intra-departmental policies and standards in support of technical and program needs;
- 5.1.2 Review and maintenance of directorate policies and standards and other technical documentation (e.g. specifications, procedures, work instructions);
- 5.1.3 Assessment and auditing/certification based on recognized quality management standards applicable to shipboard business.

5.2 Engineering and Technical Services

- 5.2.1 Detailed architecture, engineering and design;
- 5.2.2 Field/laboratory testing: Test plan development; scale and/or full size trials, instrumentation, data collection, measurement, and observation; destructive and non-destructive testing techniques, diagnostics, trouble shooting, etc.;
- 5.2.3 Technical analyses: Stress analysis (structural, fatigue, vibration); failure investigation services; physical and mathematical modeling;
- 5.2.4 Create/revise engineering/production drawings, sketches and presentation materials;
- 5.2.5 Design verification and validation;
- 5.2.6 Risk Assessments;
- 5.2.7 Develop customized technical software tools, databases;
- 5.2.8 Requirements management.

5.3 Research and Development

- 5.3.1 Reviewing technology trends, technology assessments;
- 5.3.2 Evaluating new technologies and systems;
- 5.3.3 Simulation/modeling;
- 5.3.4 Testing;
- 5.3.5 Prototyping and assembly.

5.4 Technical Project Management and Planning

- 5.4.1 Schedule development and plan initialization;
- 5.4.2 Detailed implementation schedule for a project identifying all tasks, linkages and resources;
- 5.4.3 Execute, monitor and update the project schedule and project reports;
- 5.4.4 Project risk management;
- 5.4.5 Project close out.

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- 5.5 Project Initiation and Approval
 - 5.5.1 Conduct project definition phase needs analyses, develop business cases and justification using cost/benefit analyses, economic analyses, life cycle cost or a similar technique;
 - 5.5.2 Provide options analysis. Research and assess other systems in use and develop and define options to address the functional requirements of a system. Develop and define the set of evaluation criteria against which each option will be evaluated;
 - 5.5.3 Preparing Project Approval Documentation (PAD), Treasury Board Submissions, for planning, developing and obtaining funding approvals for these national project requirements;
 - 5.5.4 Requirements definition (Statement of Requirements);
 - 5.5.5 Risk management.

- 5.6 Acquisition and Acceptance
 - 5.6.1 Create procurement documents, such as: Request for proposal, statement of work, technical specifications, bid-evaluation criteria;
 - 5.6.2 Conducting design reviews;
 - 5.6.3 Conducting equipment reliability, maintainability and supportability analyses and studies;
 - 5.6.4 Evaluation of proof of performance and quality requirements;

- 5.7 Implementation
 - 5.7.1 Developing integration and commissioning plans: Analyze pros and cons of various implementation and management plans and recommend options to meet the needs of Transport Canada in the management of its assets;
 - 5.7.2 Developing technical and installation, system integration, and acceptance test specifications, and reports;
 - 5.7.3 Performing factory and site acceptance tests;
 - 5.7.4 Developing maintenance documentation, manuals, safety instructions.

- 5.8 In Service Support
 - 5.8.1 System operation, modification, maintenance, repair, refurbishment or upgrades;
 - 5.8.2 Materiel requirements analysis and planning in support of maintenance requirements;
 - 5.8.3 Updating/creating maintenance plans/documentation/technical data requirements;
 - 5.8.4 Performing technical inspections/surveys and/or user surveys to provide advice and recommendations;
 - 5.8.5 Performing safety and environmental compliance assessments in the marine industry
 - 5.8.6 Equipment reliability, maintainability, optimization, and/or supportability analyses;
 - 5.8.7 Long term planning, evaluating and assessing current and future systems requirements;
 - 5.8.8 Risk assessments and recommendations/Risk management.

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5.9 Asset and Configuration Management

- 5.9.1 Spares analysis, planning and documentation (supply chain);
- 5.9.2 Development and maintenance of configuration management program and technical data management programs and the IT systems by which they are supported;
- 5.9.3 Carry out investigations related to maintenance management, technical training and supply chain;
- 5.9.4 Functional and physical configuration audits.

5.10 Disposal

- 5.10.1 Disposal plan development;
- 5.10.2 Decommissioning;
- 5.10.3 Impact studies.

6. Occupational Levels

Transport Canada requires access to technical professionals and functional experts in various disciplines to assist in the capital management of the fleet of passenger vessels for a broad range of engineering, technology, and marine and logistic support projects.

Occupational Level is defined by a Discipline at a given level or years of demonstrated experience in that Discipline.

| Discipline \ Levels | Senior | Intermediate |
|----------------------|--------|--------------|
| Engineer | | |
| Technical Specialist | | |
| Technologist | | |
| Project Officer | | |
| Auditor | | |

6.1 Engineer

6.1.1 Required Services

The Engineer is required, but not limited to providing their engineering expertise using life cycle material management methodology principles for: design or technologies development; design analysis considering risk, costing, etc; requirements and specifications definitions; test planning; product/documentation validation including acceptance verifications; asset inspections/surveys; fabrication, production and maintenance engineering support; technical training material development; etc. The required services also extend to project management of these technical activities.

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6.1.2 Qualification Requirements

- 6.1.1.1 An Engineer must have a university degree in engineering:
- i. from a Canadian Council of Professional Engineers (CCPE) accredited engineering program, or
 - ii. from an educational institution listed in the Engineers Canada List of foreign Engineering Educational Institutions and Professional Qualifications, or
 - iii. from an engineering program accredited by an engineering body that has signed a mutual recognition agreement with Engineers Canada,
 - iv. Alternatively, should a candidate's degree be from a non-CCPE accredited engineering program, their engineering education credentials in the appropriate field must be deemed 'substantially equivalent' to the CCPE via an application to the Engineering International - Education Assessment Program, (EI-EAP).
- 6.1.1.2 The engineer must have, or be deemed eligible for registration as a Professional Engineer by a recognized provincial licensing organization.
- 6.1.1.3 A Senior Engineer must have a minimum of ten (10) years of relevant experience. An Intermediate Engineer must have a minimum of five (5) years of relevant experience.

6.2 Technical Specialist

6.2.1 Required Services

The Technical Specialist is a subject matter expert having significant and meaningful experience in the area of expertise. Significant and meaningful experience is defined as the in depth study and tangible and/or practical experience in the given area of expertise. The Technical Specialist is required, but not limited to providing their subject matter expertise using life cycle management methodology principles for: design or technologies development; design analysis of systems and components considering risk, costs, etc; requirements and specifications definitions; test planning; product/documentation validation including acceptance verifications; asset inspections/surveys; fabrication, production and maintenance technical support; technical training material development; integrated logistic support, etc. The required services also extend to project management of the above technical or functional activities.

6.2.2 Qualification Requirements

- 6.2.2.1 A Technical Specialist must have a relevant degree from a university program, **or**
A college diploma with an additional 10 years of relevant experience over and above that stated in 6.2.2.5.
- 6.2.2.2 Be a subject matter expert in the Area of Expertise.
- 6.2.2.3 In addition, for Marine Engineering the Marine Technical Specialist must have been certified as a "First-class Engineer, Motor Ship or Steamship" by Transport Canada. Any other source of certification requires proof of validation by Transport Canada for equivalence.

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6.2.2.4 In addition, for Navigation and Sea Keeping Area of Expertise the Marine Technical Specialist must have been certified as a “Master Mariner” by Transport Canada. Any other source of certification requires proof of validation by Transport Canada for equivalence.

6.2.2.5 A Senior Technical Specialist must have a minimum of ten (10) years of relevant experience with these requirements. An Intermediate Technical Specialist must have a minimum of five (5) years of relevant experience with these requirements.

Note: A combination of technological training and extensive practical experience may be considered as being equivalent.

6.3 Technologist

6.3.1 Required Services

The Technologist is required, but not limited to providing support using life cycle material management methodology principles for: design or technologies development; design analysis of systems and components; requirements and specifications definitions; testing planning; product/documentation validation including acceptance verifications; asset inspection as applicable; fabrication, production and maintenance technical support; technical training material development; etc. The required services also extend to project management of the above technical activities.

6.3.2 Qualification Requirements

6.3.2.1 A Technologist must have a college degree or diploma in an appropriate Area of Expertise from a community or technical college, **or** Alternatively, the candidate must have a combination of technical training in an appropriate Area of Expertise and three (3) years of relevant experience over and above that stated in 6.3.2.5.

6.3.2.2 Accreditation to a chartered provincial association (or eligibility) is desired.

6.3.2.3 In addition, for the Marine Engineering Areas of Expertise the Marine Technologist must have been certified as a “Second-class Engineer, Motor Ship or Steamship” by Transport Canada. Any other source of certification requires proof of validation by Transport Canada for equivalence.

6.3.2.4 In addition, for the Navigation and Sea Keeping Areas of Expertise the Marine Technologist must have been certified as a “Master Near Coastal” by Transport Canada. Any other source of certification requires proof of validation by Transport Canada for equivalence.

6.3.2.5 A Senior Technologist must have a minimum of ten (10) years of relevant experience with these requirements. An Intermediate Technologist must have a minimum of five (5) years of relevant experience with these requirements.

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6.4 Project Officer

6.4.1 Required Services

The Project Officer is required, but not limited to providing project and task based support for various projects in a given Area of Expertise. They generally monitor and maintain progress on projects in a wide range of support activities to achieve efficient project delivery within allocated resources.

6.4.2 Qualification Requirements

6.4.2.1 A Project Officer must, as a minimum, have a Secondary School diploma.

6.4.2.2 A Senior Project Officer must have a minimum of ten (10) years of relevant experience. An Intermediate Project Officer must have a minimum of five (5) years of relevant experience.

6.5 Auditor

The Auditor is required, but not limited to providing analysis and recommendations of safety and health related policies and procedures in a marine environment. They generally monitor and provide advice and recommendations in a written format pertaining to existing shipboard policies and procedures to verify compliance with regulatory requirements and adherence to industry norms to ensure they foster a safe shipboard environment.

6.5.1 Qualification Requirements

6.5.1.1 An intermediate auditor must, as a minimum, have a Secondary School diploma and completed ISM Code Lead Auditor training from a Classification Society, or from an accredited school in Canada.

6.5.1.2 An intermediate auditor must have experience performing, assisting, or observing audits of a safety management system.

6.5.1.3 An intermediate auditor must have a minimum of ten (10) years of relevant marine experience.

6.5.1.4 A senior auditor must have in addition to 6.5.1.1 to 6.5.1.3 have been certified by Transport Canada as either a:

- a) "First-class Engineer, Motor Ship or Steamship"
- b) "Second-class Engineer, Motor Ship or Steamship"
- c) "Master Mariner"
- d) "Master Near Coastal"

Any other source of certification requires proof of validation by Transport Canada for equivalence.

7. Vessel Particulars

7.1 Fundy Rose

| | |
|-----------------|----------------|
| Home Port | Saint John, NB |
| IMO# | 9203916 |
| Official Number | 838881 |

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| | |
|--------------------------------|--|
| Gross Tonnage | 10193.00 |
| Net Tonnage | 3119.45 |
| Length OA | 123.8 meters |
| Length BP | (at 5.1 WL) 117 meters |
| Length WL | (at 5.1 WL) 122.7 meters |
| Breadth (Moulded) | 18.9 meters |
| Depth, Main Deck (Moulded) | 7.25 meters |
| Depth, Upper Deck (Moulded) | 12.25 meters |
| Draft, design (Moulded) | 4.9 meters |
| Draft, scantling (Moulded) | 5.1 meters |
| Service Speed | 23.9 knots |
| Classification | DNV-GL 1A1 RoPax |
| Passengers Maximum | 700 |
| Cars & Trailers | Main Deck (Trailers or Cars) 21 or 105 units Upper Deck (Cars) 94 units |
| Ship Builder | Daewoo Heavy Industries, Hull#7504 |
| Year Built | 2000 |
| Keel Laid | 15/07/1999 |
| DWT | 1978 |
| Electrical Distribution System | 380/220 VAC, 3 Phase, 50 hz |

7.2 Confederation

| | |
|--------------------------------|--|
| Year Built | 1992 – entered service 1993 |
| Builder | Pictou Industries Ltd, Pictou, Nova Scotia |
| Home Port | Caribou, NS |
| IMO #: | 9050008 |
| Official Number | 815540 |
| Gross Tonnage | 8061 |
| Registered tonnage | 5998 |
| Class | LRS + 100 A1, 'Ferry: Gulf of St. Lawrence coastal service in ice free conditions' |
| Passenger Capacity | 600 passengers + 18 crew |
| Vehicle Capacity | 215 cars or 16 Tractor Trailers |
| Length Overall | 114.2 meters |
| Length between Perpendiculars | 97.4 meters |
| Breadth Moulded | 18.77 meters |
| Breadth Extreme (over fenders) | |
| Depth Moulded to Vehicle Deck | 5.4 meters |
| Draft – All Season (full) | 4.44 meters |

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| | |
|---------------------------------|---|
| Lightship (May 2003) | 3112 meters |
| Deadweight at Draft | 1586 tonne |
| Frame Spacing | 600 mm |
| Speed | 18 knots |
| Lane Metres | 1045 meters |
| Main Engines | 2 x Wartsila Wichmann, Mod 10V28B 2,890 kW @ 600 RPM |
| Generators | 3 x Caterpillar, Model 3408B 350 kW @ 1800 RPM |
| Central Reduction Gear/Clutches | 1 x Valmet M2HC-1387, double input, double output |
| Reduction Gears/Clutches | 2 x Volda ACG-750H |
| Propeller Hubs | 2 x Wichmann, 9PR4-13JS3 (CCW), 9PR4-13IS3 (CW) |

7.3 Holiday Island

| | |
|--------------------------------|--|
| Manager | Bay Ferries Ltd (Subsidiary of Northumberland Ferries Limited) |
| Year Built | 1971 |
| Builder | Port Weller Dry-dock, St. Catherines, Ontario |
| Home Port | Charlottetown, PEI |
| IMO #: | 7041431 |
| Official Number | 344866 |
| Gross Tonnage | 3037 |
| Registered tonnage | 1593 |
| Class | LRS + 100 A1, Caribou, NS to Wood Island, PEI |
| Passenger Capacity | 486 passengers + 22 crew |
| Vehicle Capacity | 150 cars, 14 Tractor Trailers (main vehicle deck only) |
| Length Overall | 99.01 meters |
| Length between Perpendiculars | 96.62 meters |
| Breadth Moulded | 20.42 meters |
| Breadth Extreme (over fenders) | 20.75 meters |
| Depth Moulded to Vehicle Deck | 7.09 meters |
| Draft – All Season (full) | 5.03 meters |
| Lightship (May 2003) | 2781 meters |

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| | |
|---------------------|--|
| Deadweight at Draft | 1419 tonne |
| Frame Spacing | 760 mm |
| Speed | 15 knot (12 knots service speed witnessed) |
| Lane Metres | 1045 meters |
| Main Engines | 2 x Anglo Belgian Corp, Mod 12VDZC-900-166-K C2 2388 KW @ 900 RPM |
| Generators | 2 x Cummins, Mod NTA 855G2 (Big Cam) 275 eKw @ 1200 RPM |
| Reduction Gear | 2 x Hindmarch/MWD, Type R, Size 9 |
| Clutch/Couplings | 2 x Fluid Drive Engineering Co Ltd, UK, Size 52 |
| Propulsion | 2 x Voith, Cycloidal Propeller, Nr 1760, 1970 |

7.4 Madeleine

| | |
|--------------------------------|--|
| Manager | C.T.M.A (Cooperative de Transport Maritime and Aerien) |
| Year Built | 1980 |
| Builder | Verolme Cork Dockyard, Cork, Ireland (Yard #979) |
| Home Port | Cap-aux-Meules, Îles de la Madeleine |
| IMO #: | 7915228 |
| Official Number | 820241 |
| Gross Tonnage | 10,024 |
| Registered tonnage | 3,007 |
| Class | Lloyd's Register |
| Passenger Capacity | 750 passengers + 50 crew |
| Vehicle Capacity | 329 automobiles/39 Trucks |
| Length Overall | 123.96 meters |
| Length between Perpendiculars | 112.00 meters |
| Breadth Moulded | 18.6 meters |
| Breadth Extreme (over fenders) | 18.83 meters |
| Depth Moulded to Upper Deck | 12.55 meters |
| Depth Moulded to Main Deck | 7.09 meters |

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| | |
|---------------------------|---|
| Draft – All Season (full) | 4.99 meters |
| Frame Spacing | 650 mm (610 fore and aft) |
| Speed | 20 Knots |
| Lane Metres | 750 meters |
| Main Engines | 4 x MaK, Model 8M551AK 3356 kW @ 450 RPM |
| Generators | 4 x Bergen Type LDG 6, 740 kW @ 750 rpm Nebb alternators 887 KVA, 400 VAC, 3 PH, 50 Hz |
| Reduction Gear | 2 x De Schelde |
| Clutch/Couplings | 4 x Unknown |
| Propulsion | 2 x Kamewa Controllable Pitch Propellers |

7.5 Princess of Acadia

| | |
|--------------------------------|---|
| Year Constructed | 1971 |
| Class | Lloyd's Register |
| Gross Tons | 10,051 |
| Net Tons | 7012 |
| Length Overall | 146.31 metres |
| Breadth | 20.53 metres |
| Draft | 4.65 metres |
| Depth | 6.4 metres |
| Lane-metres | 637 |
| Complement (Passengers & Crew) | 692 |
| Deadweight | 2093 |
| Main engines: | 4 x 2144 kW |
| MAIN POWER: | Twin shaft - the vessels main engines are four (4) EMD 16-645 E-5 diesel engines |
| ELECTRICAL: | Three (3) EMD 8-645-E2, 975 HP Roots blown engines driving Tamper (Cannon) 650 Kw, 440 VAC, 60 Hz |

**Annex B:
Technical Investigation and Engineering Support
Technical Evaluation Plan**

1. Purpose

- 1.1 The technical evaluation plan provides bidder instructions with respect to the format and information each bidder must provide in their submission in order to be compliant. Details on how each bid will be evaluated, including comprehensive mandatory and rated scoring grids are also included.

2. Scope

- 2.1 Qualified suppliers, as determined by the evaluation process, will be part of a Transport Canada Supply Arrangement (SA) and be may called upon to perform specific tasks and/or projects.

3. Bid Evaluation

- 3.1 Any and all tables included in this Annex must be copied or recreated in your bid submission for evaluation.
- 3.2 Tables which include self-evaluation will assist in ensuring the proponent submits a clear and complete bid package, and will assist the evaluation team to ensure it is accurately and efficiently evaluated.
- 3.3 Each bid will be evaluated for:

Mandatory criteria:

Areas of Expertise and Occupational Level Resource References (M.1)

Rated criteria:

Company Profile Evaluation (R.1)

Company Profile Scoring (R.2)

Personnel Evaluation (R.3)

4. Mandatory Criteria

- 4.1 Areas of Expertise and Occupational Level Resource References (M.1)
- The purpose of this criteria is for the bidder to indicate which Area of Expertise they wish to provide, and demonstrate how they have the necessary minimum resources to do so.
- 4.1.1 The Bidder can bid in as many Areas of Expertise as are listed.
- 4.1.2 Using Table 1 provided, the Bidder must select and qualify for at least two (2) of the Areas of Expertise listed to be part of this Supply Arrangement.
- 4.1.3 Transport Canada definitions of the different Areas of Expertise are listed in SOR Section 4.0.
- 4.1.4 An identified resource must either be an employee or an associate/sub of the bidding company. In the case of an associate/sub, **a cooperation agreement is to be included in the bid package**, and must be valid for a minimum duration of one (1) year.

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- 4.1.5 An individual may only be identified once for any given area of expertise
- 4.1.6 The Bidder must provide evidence that the proposed resources have the appropriate combination of education, certifications, and experience in accordance with the qualification requirements of Annex "A".
- 4.1.7 A qualified senior level resource may assume an intermediate level position.

Bidder Instruction:

1. The Bidder is to complete Table 1 and identify the areas of Expertise for which they wish to be considered by marking an X in the appropriate row of the "Bidder's Selected Area of Expertise" column.
2. The non-greyed areas of the table identify discipline and levels that are required to be identified for any given area of expertise. The greyed out areas need not be completed.
3. To receive consideration for any given area of expertise the bidder must provide the name of an individual and reference the proposal where the details of that individual can be verified.
4. It is only necessary to identify one resource for each level and area of expertise, even if extra resources are available.
5. Attach a numbered resource package for each resource including a Resume/CV*, and a copy of Appropriate Documentation (i.e. degree, diploma, certificate, eligibility)

*All Resume/CV documents must be provided with numbered paragraphs for easy referencing within the Bid package to facilitate the evaluation process for the rated criterion in Section 5.0.

**Annex B:
 Technical Investigation and Engineering Support
 Technical Evaluation Plan**

Table 1

| Discipline | | Bidder's Selected Areas of Expertise | Engineer | | Technical Specialist | | Technologist | | Project Officer | | Auditor | |
|--|---------------|--------------------------------------|--------------------|--------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Area of Expertise | Level | | Senior | Intermediate | Senior | Intermediate | Senior | Intermediate | Senior | Intermediate | Senior | Intermediate |
| | SOR Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference | Name and Reference |
| A. Naval Architecture | 4.1 | | | | | | | | | | | |
| B. Marine Engineering | 4.2 | | | | | | | | | | | |
| C. Navigation and Ship keeping | 4.3 | | | | | | | | | | | |
| D. Health and Safety Services | 4.4 | | | | | | | | | | | |
| E. Management Systems Auditing | 4.5 | | | | | | | | | | | |
| F. Environment Systems Vessel Based | 4.6 | | | | | | | | | | | |
| G. Marine Communication and Navigation Systems: Vessel Based | 4.7 | | | | | | | | | | | |
| H. Marine Informatics Technology | 4.8 | | | | | | | | | | | |

**Annex B:
Technical Investigation and Engineering Support
Technical Evaluation Plan**

5. Rated Criteria

5.1 Company Profile Evaluation (R.1)

5.1.1 The bidder must complete Table 2.

5.1.2 The bidder must provide a brief company profile for **each** Area of Expertise selected, by Type of Work, using Table 2.

5.1.3 The company profile should include what, how much, and when the experience was gained with respect to each of the **ten (10)** Types of Work identified in the SOR. They are:

1. Policies and Standards Development
2. Engineering and Technical Services
3. Research and Development
4. Technical Project Management and Planning
5. Project Initiation and Approval
6. Acquisition and Acceptance
7. Implementation
8. In-Service Support
9. Asset and Configuration Management
10. Disposal

5.1.4 In Table 2 some of the type of works are listed as transferable, which indicates that the corporate expertise only needs to be described **once** and applies to all Areas of Expertise. When described for one area of expertise, subsequent areas of expertise need only reference the area of expertise in which the type of work is proven. If the type of work is listed as Non-Transferable then the type of work needs to be described for **each Area of Expertise selected in M.1**.

5.1.5 Note that all of the corporate knowledge discussed in the company profile must be currently available. Bidders must demonstrate this by referencing proposed resource resumes where appropriate within Table 2.

5.1.6 The pass/fail criteria for Rated Criteria R.1 **for a given Area of Expertise** are:

1. The company must have demonstrated significant and meaningful experience in three (3) out of six (6) Transferable Types of Work,

and

2. The company must have demonstrated significant and meaningful experience in three (2) out of four (4) Non-Transferable Types of Work.

Definition: Significant and meaningful experience is defined as a responsibility to deliver complete sections of a project and not to deliver minor or limited punctual elements of a project.

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Technical Investigation and Engineering Support
Technical Evaluation Plan

Bidder Instruction:

1. Complete Table 2 for **each Area of Expertise** for which you wish to be considered as identified in R.1. The table should be recreated / copied for each Area of Expertise.
2. Provide company profile information for all Non-Transferable Types of Work for **each Area of Expertise**.
3. Providing company profile information for all Transferable Types of Work need be completed for one area of expertise only.
4. Include the page and paragraph number for reference verification.

**Annex B:
 Technical Investigation and Engineering Support
 Technical Evaluation Plan**

Table 2

| Area of Expertise: _____ | | | | |
|---|---------------|---------------|--|--|
| Types of Work | SOR Reference | Transferable? | Profile and Reference Information (Name / Page / Paragraph) | |
| Policies and Standards Development | 5.1 | Yes | | |
| Engineering and Technical Services | 5.2 | No | | |
| Research and Development | 5.3 | No | | |
| Technical Project Management and Planning | 5.4 | Yes | | |
| Project Initiation and Approval | 5.5 | Yes | | |
| Acquisition and Acceptance | 5.6 | Yes | | |
| Implementation | 5.7 | Yes | | |
| In Service Support | 5.8 | No | | |
| Asset and Configuration Management | 5.9 | No | | |
| Disposal | 5.10 | Yes | | |

**Annex B:
Technical Investigation and Engineering Support
Technical Evaluation Plan**

5.2 Company Profile Scoring (R.2)

5.2.1 The bidder must complete a self-evaluation for all Areas of Expertise identified using Table 3 Summary Scoring Grid and the scoring methodology defined in section 5.2.2. The pass mark is **50%** for any given area of expertise.

5.2.2 Points will be awarded as follows, using Table 3 Summary Scoring Grid:

- One **(1) point** will be awarded for significant, meaningful demonstrated experience in a Type of Work occurring between **five (5) and ten (10) years or more.**
- Two **(2) points** will be awarded for significant, meaningful demonstrated experience in a Type of Work within the **past five (5) years.**
- The maximum of three **(3) points** will be awarded for significant, meaningful demonstrated experience in a Type of Work in **both periods mentioned above.**
- Zero (0) points will be awarded if significant, meaningful experience is not clearly demonstrated.

Definition: Significant and meaningful experience is defined as a responsibility to deliver complete sections of a project and not to deliver minor or limited punctual elements of a project.

Bidder Instruction:

1. The bidder must complete a self-evaluation for **all** Areas of Expertise identified using Table 3 Summary Scoring Grid and the scoring methodology as defined above in **section (5.2.2).**
2. Insert a self-score of 0 to 3 for each row for each *Area of Expertise* identified **as described in 5.2.2.**
3. Use the last three (3) rows to summarize as follows:
 - Identify if the minimum demonstrated experience was reached;
 - Sum the Total Points for each Area of Expertise;
 - Convert the sum to a Percentage of the Maximum possible score of 30 points.

**Annex B:
 Technical Investigation and Engineering Support
 Technical Evaluation Plan**

Table 3

| Types Of Work | Areas of Expertise | SOR Reference | Transferable | Naval Architecture | Marine Engineering | Navigation and Ship Keeping | Health and Safety Services | Management Systems Auditing | Environmental Services: Vessel | Marine Comm. & Navigation Systems: Vessel Based | Marine Informatics Technology |
|--|--------------------|---------------|--------------|--------------------|--------------------|-----------------------------|----------------------------|-----------------------------|--------------------------------|---|-------------------------------|
| Policies and Standards Development | | 5.1 | Y | | | | | | | | |
| Engineering and Technical Services | | 5.2 | N | | | | | | | | |
| Research and Development | | 5.3 | N | | | | | | | | |
| Technical Project Management and Planning | | 5.4 | Y | | | | | | | | |
| Project Initiation and Approval | | 5.5 | Y | | | | | | | | |
| Acquisition and Acceptance Implementation | | 5.6 | Y | | | | | | | | |
| In Service Support | | 5.7 | Y | | | | | | | | |
| Asset and Configuration Management | | 5.8 | N | | | | | | | | |
| Disposal | | 5.9 | N | | | | | | | | |
| | | 5.10 | Y | | | | | | | | |
| | | | | | | | | | | | |
| Demonstrated experience achieved [Y / N] (i.e. 3/6 Transferable and 2/4 Non-Transferable) | | | | | | | | | | | |
| Total Points | | | | | | | | | | | |
| Percent of Maximum (score / 30) | | | | | | | | | | | |

Annex B:
Technical Investigation and Engineering Support
Technical Evaluation Plan

5.3 Personnel Evaluation (R.2)

The purpose of this section is to verify the eligibility of each resource individually, as well as the organisation as a whole.

- 5.3.1 The bidder must complete the pertinent **Tables 4-11** and respond to the questions contained within.
- 5.3.2 For this Rated Criteria R.2, **at least one** Occupational Level is identified as mandatory in Table 4 – 11 for each Area of Expertise, and is prefilled in each table. The proposed resource(s) for these Occupational Levels must have demonstrated significant experience in at **least 50%** of all Imperative Fields of Speciality.
- 5.3.3 A Field of Specialty listed is tagged with an “I” for Imperative, “A” for Asset.
- 5.3.4 The bidder is to supply all proposed resources, with proposed occupational levels in these tables for a given Area of Expertise. A resource can be submitted for multiple areas of expertise.
- 5.3.5 The organisation **as a whole** must have demonstrated significant and meaningful experience in **all** Imperative Fields of Speciality through a combination of mandatory and additional resources.
- 5.3.6 **Any** proposed resource must have significant and meaningful experience in **at least 25%** of the Imperative Fields of Speciality. Significant and meaningful experience is defined as a responsibility to deliver complete sections of a project and not to deliver minor or limited punctual elements of a project.
- 5.3.7 Although it is not a requirement to provide reference to supplied documentation for evidence of experience in any given field of speciality for optional resources, this information must be provided upon request.

**Annex B:
Technical Investigation and Engineering Support
Technical Evaluation Plan**

Bidder Instruction:

1. Complete the appropriate Area of Expertise tables (See Table 4 to Table 11) At least 2 of the 7 Tables must be provided in the bid.
2. Each table allows for up to 6 persons to be submitted for each Area of Expertise, additional tables may be used to accommodate others.
3. The same person can be submitted for multiple Areas of expertise. Although only 1 or 2 individuals are **mandatory**, any individuals that will be used to complete work **must be included in this table** for assessment.
4. In the grid space provided for each Field of Specialty, insert a Y or N to indicate yes or no as to the individual having significant experience in that area of speciality.
5. The column "Para" is provided to cross reference the proposal and **must be filled** for mandatory resources, and is optional for additional resources.

Although it is not a requirement to provide reference to supplied documentation for evidence of experience in any given field of speciality for optional / additional resources, this information must be provided upon request.

Table 4 Naval Architect

| Naval Architect | | | | | | | | | | | | | | |
|---|------------------|-------|------------------|----------------------|------------------|-------|------------------|-------|------------------|----------------------|------------------|-------|------------------|-------|
| Occupational Discipline | Engineer | | | Technical Specialist | | | Engineer | | | Technical Specialist | | | | |
| Occupational Level | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. |
| Candidate Name | | | | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | | | | |
| Fields of Specialty | Tag | | | | | | | | | | | | | |
| 1. Ship hull structure, structural arrangement and strength, vibration and passive fire protection; | I | | | | | | | | | | | | | |
| 2. Ship design, construction, modernization and repair; | I | | | | | | | | | | | | | |
| 3. Propulsion, rudders, propellers and steering system design; | I | | | | | | | | | | | | | |
| 4. Vessel stability, open water and ice; | I | | | | | | | | | | | | | |
| 5. Hull systems including areas such as accommodation outfit, launch and recovery systems, doors and closures, closing appliances, corrosion control, etc.; | I | | | | | | | | | | | | | |
| 6. Materials and materials maintenance as applied to the construction of ship's hull and outfit systems; paint coatings; | I | | | | | | | | | | | | | |
| 7. Ship condition surveys and advice; | I | | | | | | | | | | | | | |
| 8. Canadian acts, regulations, international conventions, codes and Classification society rules pertaining to the design, construction and operation of ships in all Voyage Classes and ASPRR types and classes; | I | | | | | | | | | | | | | |
| 9. Design standards and classification rules as they may apply to RO-RO passenger vessels; | I | | | | | | | | | | | | | |
| 10. Ship structure, design and analysis, advanced structure analysis techniques; | I | | | | | | | | | | | | | |
| 11. Manoeuvring; Open water and ice; | A | | | | | | | | | | | | | |
| 12. Sea keeping and towing; | A | | | | | | | | | | | | | |
| 13. Cargo gear/ lifting systems; | A | | | | | | | | | | | | | |
| 14. Anchor and mooring gear. | A | | | | | | | | | | | | | |

Table 5 Marine Engineering

| Marine Engineering | | | | | | | | | | | |
|---|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|
| Occupational Discipline | Technical Specialist | | Technologist | | Senior | | Senior | | Senior | | |
| Occupational Level | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) |
| Candidate Name | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | |
| Fields of Specialty | Tag | | | | | | | | | | |
| 1. Diesel Prime mover; | I | | | | | | | | | | |
| 2. Electrical generation and distribution (propulsion and ship service); | I | | | | | | | | | | |
| 3. Manoeuvring (thrusters, azimuthing drives, etc); | I | | | | | | | | | | |
| 4. Propulsion controls and instrumentation, alarm and monitoring; | I | | | | | | | | | | |
| 5. Propeller pitch control, shafting, reduction gear and pod propulsion; | I | | | | | | | | | | |
| 6. Steering gear; | I | | | | | | | | | | |
| 7. Ship condition surveys and advice; | I | | | | | | | | | | |
| 8. Fire protection systems; | A | | | | | | | | | | |
| 9. Auxiliary and Domestic Systems (refrigeration, hydraulic, compressor, purifier, potable, waste water, HVAC, etc); | I | | | | | | | | | | |
| 10. Pumps, Valves and piping system; | I | | | | | | | | | | |
| 11. Deck machinery and cargo equipment; | I | | | | | | | | | | |
| 12. Vibration and stress analysis | A | | | | | | | | | | |
| 13. Waterborne Noise Management (ICES and others). | A | | | | | | | | | | |
| 14. Maintenance Management; including: maintenance requirements analysis and planning using accepted methodologies; predictive maintenance programs; | A | | | | | | | | | | |
| 15. The management of Life Cycle Management activities in one of the life cycle management phase (conception, acquisition, in-service and disposal) for assets. | A | | | | | | | | | | |

Table 6 Navigation and Ship Keeping

| Navigation and Ship Keeping | | Technical Specialist | | Technologist | | Senior | | Senior | | Senior | |
|---|-----|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Discipline | Tag | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. |
| Occupational Level | | | | | | | | | | | |
| Candidate Name | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | |
| Fields of Specialty | | | | | | | | | | | |
| 1. Ship design, construction, modernization and repair; | I | | | | | | | | | | |
| 2. Passive and active fire protection operations and maintenance | I | | | | | | | | | | |
| 3. Propulsion, rudders, propellers and steering system operation; | I | | | | | | | | | | |
| 4. Vessel navigation and stability, open water and ice; | I | | | | | | | | | | |
| 5. Hull systems including areas such as accommodation outfit, launch and recovery systems, doors and closures, closing appliances, corrosion control, etc.; | I | | | | | | | | | | |
| 6. Materials and materials maintenance as applied to the maintenance of ships hull and outfit systems, paint coatings; | I | | | | | | | | | | |
| 7. Ship condition surveys and advice; | I | | | | | | | | | | |
| 8. Canadian acts, regulations, international conventions, codes and Classification society rules pertaining to the design, construction and operation of ships in all Voyage Classes; | I | | | | | | | | | | |
| 9. Sea keeping; | I | | | | | | | | | | |
| 10. Deck machinery, cargo equipment, lifting systems, tackle maintenance; | I | | | | | | | | | | |
| 11. Vessel Navigation and communication equipment required for unlimited and restricted navigation | I | | | | | | | | | | |
| 12. Passenger Safety Management | I | | | | | | | | | | |
| 13. Maintenance Management; including: maintenance requirements analysis and planning using accepted methodologies; predictive maintenance programs; | A | | | | | | | | | | |

Table 7 Health and Safety Services

| Health and Safety Services | | | | | | | | | |
|---|--------------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Discipline | Technologist | | | | | | | | |
| Occupational Level | Senior | | | | | | | | |
| Candidate Name | | | | | | | | | |
| Reference Page | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | |
| Fields of Specialty | Tag | Experience (Y/N) | Para. |
| 1. Marine Occupational Health and Safety expertise; | I | | | | | | | | |
| 2. Human factors, ergonomics, biomechanics; | I | | | | | | | | |
| 3. Compliance audit experience; | I | | | | | | | | |
| 4. Industrial hygiene assessments or services. | I | | | | | | | | |
| 5. Technical Training Management: Expertise in the following areas of course development: Asynchronous and synchronous communication (E-Learning); task analysis; terminal and enabling objectives; criterion tests; development and design of review tests; identifying training requirements and course schedules; development and design for evaluation of technical training. | A | | | | | | | | |

Table 8 Management Systems Auditing

| Management Systems Auditing | | | | | | | | | | | | | |
|--|--------|------------------|-------|------------------|-------|------------------|--------------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Level | Senior | | | | | | Intermediate | | | | | | |
| Candidate Name | | | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | | | |
| Fields of Specialty | Tag | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. | Experience (Y/N) | Para. |
| 1. Safety and environmental compliance assessments in the marine industry | I | | | | | | | | | | | | |
| 2. Planning, preparation, performance, recording, reporting and follow-up of audits | I | | | | | | | | | | | | |
| 3. Principles and best practices of harmonized audits and verifications | I | | | | | | | | | | | | |
| 4. Handling of non-conformities including root cause analysis and corrective actions | I | | | | | | | | | | | | |

Table 9 Environmental Services: Vessel

| Environmental Services: Vessel | | Technologist | | | | | | | | | | | |
|--|-----|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Discipline | | Senior | | | | | | | | | | | |
| Occupational Level | | Experience (Y/N) | Para. |
| Candidate Name | | | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | | | |
| Fields of Specialty | Tag | Experience (Y/N) | Para. |
| 1. Applicable National and International Environmental Laws and Regulations (Canadian Environmental Protection Act, Canadian Standards Association, International Maritime Organization etc.); | I | | | | | | | | | | | | |
| 2. Coating application, inspection, and certification; | I | | | | | | | | | | | | |
| 3. Environmental Management Framework (Carbon footprint, environmental loading assessment); | I | | | | | | | | | | | | |
| 4. Emissions and Fuels (e.g. low sulphur, bio-fuels); | I | | | | | | | | | | | | |
| 5. Environmental sensors (e.g. anemometers, humidity); | I | | | | | | | | | | | | |
| 6. Hazardous materials and substances (e.g. heavy metals, asbestos); | I | | | | | | | | | | | | |
| 7. Compliance audit experience. | A | | | | | | | | | | | | |
| 8. Inventory of Hazardous Material | A | | | | | | | | | | | | |

Table 10 Marine Communication & Navigation Systems: Vessel Based

| Marine Communication & Navigation Systems: Vessel Based | | Technologist | | | | | | | | | | | |
|--|-----|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Discipline | Tag | Experience (Y/N) | Para. |
| Occupational Level | | | | | | | | | | | | | |
| Candidate Name | | | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | | | |
| Fields of Specialty | | | | | | | | | | | | | |
| 1. Radio Communications and Direction Finder Systems: VHF/HF/MF Communication (AM/FM Transmitters, Receivers, Transceivers), Secure Radios, Digital Selective Calling (DSC) systems, Satellite communications systems; | I | | | | | | | | | | | | |
| 2. Situational Awareness and Position Reporting Systems: Automatic Identification (AIS), Long Range Identification and Tracking (LRIT), GPS/DGPS Systems, Radar, Electronic Chart Systems; | I | | | | | | | | | | | | |
| 3. Antennae and filtering (tuning); | I | | | | | | | | | | | | |
| 4. Marine Communications: Telecommunication systems, Cellular Phones, Integrated Communication Systems; | I | | | | | | | | | | | | |
| 5. Digital techniques including voice digitization, compression, multiplexing and switching; | I | | | | | | | | | | | | |
| 6. Meteorological Systems: Navtex (Meteorological info in text form), Fax (weather), Ice imagery; | I | | | | | | | | | | | | |
| 7. Instrumentation and Monitoring Systems; | I | | | | | | | | | | | | |
| 8. Uninterruptible Power Supplies (UPS); | I | | | | | | | | | | | | |
| 9. Integrated Navigation Systems; | I | | | | | | | | | | | | |
| 10. Gyrocompass; | I | | | | | | | | | | | | |
| 11. Safety of Life at Sea (SOLAS) requirements: Emergency Position Indicating Radio Beacons (EPIRBs), Global Maritime Distress and Safety Systems (GMDSS); | I | | | | | | | | | | | | |
| 12. Autopilot systems. | I | | | | | | | | | | | | |

Table 11 Marine Informatics Technology

| Marine Informatics Technology | | Technologist | | | | | | | | | |
|--|-----|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Occupational Discipline | Tag | Experience (Y/N) | Para. |
| Occupational Level | | | | | | | | | | | |
| Candidate Name | | | | | | | | | | | |
| Reference Page | | | | | | | | | | | |
| M.2 Proof of education (Y/N) | | | | | | | | | | | |
| M.2 Years of Experience | | | | | | | | | | | |
| Fields of Specialty | | | | | | | | | | | |
| 1. Voice, data, and universal communications networks; | I | | | | | | | | | | |
| 2. Computer systems (hardware, software and related technologies); | I | | | | | | | | | | |
| 3. Emerging telecommunications and information technologies and their application; | I | | | | | | | | | | |
| 4. Telecommunication services and their respective regulatory environment and standards; | I | | | | | | | | | | |
| 5. WAN / Satellite / Carrier service procurement; | I | | | | | | | | | | |
| 6. Information Systems Standards; | I | | | | | | | | | | |
| 7. Networks (wired and wireless), hardware, software, power, cooling, monitoring, security and management; | I | | | | | | | | | | |
| 8. Remote patch management over unreliable connectivity; | Q | | | | | | | | | | |
| 9. Network design best practices; | Q | | | | | | | | | | |
| 10. Communications Control Systems (CCS); | I | | | | | | | | | | |
| 11. Remote monitoring and maintenance; | I | | | | | | | | | | |
| 12. Technical database administration; | I | | | | | | | | | | |
| 13. Custom programs and applications; | Q | | | | | | | | | | |
| 14. IT security; | Q | | | | | | | | | | |
| 15. Disaster Recovery and Business Continuity. | Q | | | | | | | | | | |

