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Place du Portage, Phase III
Core 0B2 / Noyau 0B2
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Bid Fax: (819) 997-9776

**LETTER OF INTEREST
LETTRE D'INTÉRÊT**

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
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Issuing Office - Bureau de distribution

Ship Construction, Refit and Related
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Gatineau
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K1A 0S5

Title - Sujet RFI for the Build RFP of the NSFRV	
Solicitation No. - N° de l'invitation F7013-210006/A	Date 2021-10-27
Client Reference No. - N° de référence du client F7013-210006	GETS Ref. No. - N° de réf. de SEAG PW-\$\$MC-040-28383
File No. - N° de dossier 040mc.F7013-210006	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Standard Time EST on - le 2021-12-31 Heure Normale du l'Est HNE	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Deslauriers(MC Div), Stephane	Buyer Id - Id de l'acheteur 040mc
Telephone No. - N° de téléphone (819) 420-2899 ()	FAX No. - N° de FAX (819) 956-0897
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Specified Herein Précisé dans les présentes	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée See Herein – Voir ci-inclus	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Request for Information (RFI)

This Request for Information (RFI) is to engage industry for the procurement of the construction of one (1) new Near-Shore Fishery Research Vessel (NSFRV).

One-on-One Sessions

All interested shipyards with experience in the construction of new build vessels are invited to participate in the consultative one-on-one sessions via videoconference. **Note that these sessions are only open to shipyards.**

All industry consultations will be documented and this information is subject to the Access to Information Act. Canada shall not reveal any designated proprietary information to third parties.

Participants are encouraged to provide representatives that can speak to the technical/contractual aspects of the process.

Purpose of the Consultative Process

The purpose of the consultative process is to finalize the overall approach to the anticipated Request for Proposal (RFP). The RFI will consist of 1 round of one-on-one meetings to discuss the draft Final Build RFP documentation prior to its release.

The one-on-one sessions present Canada with an opportunity to obtain feedback from industry to better understand what is presently being done (best practices) by suppliers for similar requirements and how Canada's own requirement can best be met. The sessions will also allow industry to provide input on all aspects of the procurement, including procurement strategy, basis of payment, Statement of Work, selection methodology and evaluation of bids. Furthermore, the consultation process will allow Canada to assess market availability and capability of suppliers to provide services. The combination of Canadian Coast Guard's (CCG) operational needs and the feedback provided by industry is essential to the writing of the final technical requirements as they evolve prior to release of the final RFP.

One-on-One Consultation

The one-on-ones are anticipated to be held mid- November 2021 and will be held virtually by videoconference due to COVID-19. Sessions are anticipated to be 2 hours in length but this may be adjusted accordingly dependent on response from industry. Respondents are invited to provide a 30 minute presentation.

Following presentations, the rest of the session will likely be focused on questions from Canada included in this document (Annex B) and open for any questions from the interested supplier.

Please note that respondents are encouraged to send the responses to the questions in Annex B and their presentation prior to the one-on-one session to the PSPC Contracting Authority (CA).

Guidance for Corporate Presentations – Round 1

Respondents will be given up to 30 minutes for their presentations. While presentations may include a corporate history, it is encouraged that presentations focus on the respondent's history on work relevant to this procurement. Specifically, respondents are encouraged to discuss their experiences working on vessels of similar size and complexity to the NSFRV.

Estimated Schedule

The target date for the release of the Final RFP is spring 2022-2023. However, circumstances around Covid-19 may impact this schedule. If the schedule does shift, it will be communicated to respondents to the RFI.

Supporting Documentation

Any additional documents will be provided through amendment to this solicitation and will be made available on www.buyandsell.gc.ca

Follow-up communication

Respondents expressing interest in participating in the sessions will be invited to participate in the one-on-one consultation sessions. Parties interested in bidding on the final RFP are not required to participate in the sessions.

Nature and Format of Responses Requested

Respondents are requested to contact the Public Services and Procurement Canada (PSPC) Contracting Authority to confirm their interest in participating in the industry consultation session and to provide **3** preferred date(s) and time for their one-on-one session. Please note the sessions will be scheduled between November 22nd and November 29th inclusively. There will be **2 sessions per day**, one at **9:15am** and one at **1:15pm** (Eastern Standard Time). If the schedule is limited a date and time will be proposed to the Respondent.

Respondents are also requested to provide any feedback, comments or concerns they may have to this RFI. Respondents can also provide comments regarding the content, format, and/or organization of any draft documents included in this RFI.

This document is not a bid solicitation. This Request for Information (RFI) will not result in the award of any contract. As a result, potential suppliers of any goods or services described in this RFI should not reserve stock or facilities, nor allocate resources, as a result of any information contained in this RFI. Nor will this RFI result in the creation of any source list.

The procurement of any goods or services described in this RFI will not necessarily follow this RFI.

Response Costs

Canada will not reimburse any respondent for expenses incurred in responding to this RFI. Respondents will have no claim for damages, compensation, loss of profit, or allowance arising out of providing answers and comments to the attached.

Treatment of information gathered from the consultation sessions

The information gathered may be used by Canada to:

- Develop/Modify procurement strategies and evaluation criteria.
- Support the development of the Final RFP.

Review Team: A review team composed of representatives of the PSPC and CCG Vessel Procurement personnel will form the primary team for the consultations. Canada reserves the right to hire any independent consultant, or use any Government resources that it considers necessary to review any response.

Confidentiality: Respondents should mark any portions of their response that they consider proprietary or confidential. Canada will handle the responses in accordance with the *Access to Information Act*.

Activity: Canada will contact respondents to coordinate meeting times for the industry consultation sessions. Times selected will be on a first come first served basis. Canada will work with respondents to align with availability of key personnel to attend the sessions, as required. The industry consultation sessions may take place as videoconferences or teleconferences, as appropriate given the supplier and Canada's availability.

Fairness Monitor

Canada has engaged P1 Consulting Inc. as a fairness monitor for this procurement.

Contents of this RFI

This RFI contains the following attached document(s):

1. Engineering Support Services Information – Annex A
2. Questions to Industry – Annex B
3. Statement of Work (SOW) – Annex C
4. Terms and Conditions – Annex D

Enquiries

All communications regarding this RFI must be directed to the Contracting Authority to ensure fair and transparent treatment of all respondents. Because this is not a bid solicitation, Canada may not necessarily respond to enquiries in writing or by circulating answers to all potential respondents.

Contracting Authority: Stephane Deslauriers

Stephane.Deslauriers@tpsgc-pwgsc.gc.ca

Registration

Respondents wishing to attend the one-on-one Sessions via videoconference (Microsoft Teams or Webex) are to register by notifying the PSPC Contract Authority identified herein, electronically by email no later than **November 17, 2021** at 02:00 EST. Respondents should include 3 preferred meeting time slots between **November 22, 2021 and November 29, 2021** (9:15am and 1:15pm EST). Sessions will be scheduled on a first come first served basis.

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In the subject line, respondents should clearly indicate the project name and solicitation reference number as follows:

“NSFRV Build RFI F7013-210006”

Participants must identify themselves by their legal name, corporate address, the names of representatives attending and their respective title, office address, telephone number(s) and e-mail address. By providing the above information, the respondents consent to the release of this information to the public. Call-in or videoconference co-ordinates, for those wishing to participate in a video/teleconference can be provided 24 hours prior to the Session Date.

Annex A – Engineering Support Services Information

NSFRV Procurement Background

In August 2018, Canada released a Request for Information to single system integrators (SSIs) for an ongoing consultation period and to communicate to industry Canada's interest in early selection of SSIs during the Design Contract.

In August 2019, Canada issued a follow-on RFI formally closing out the consultation period with SSIs and to invite shipyards to provide feedback.

In December 2019, Canada entered to contract with Robert Allan Ltd. (RAL) for an updated design of the initial RAL NSFRV design.

In February 2020, Canada entered into contract with Lloyd's Register as the Classification Society for the NSFRV design.

In August 2020, Canada issued a Draft Request for Identification (RFID) to select a Propulsion SSI for recommendation by Canada to work with RAL.

In September 2020, Canada issued a final Request for Identification (RFID) to select a Propulsion SSI for recommendation by Canada to work with RAL. Aspin Kemp and Associates (AKA) were recommended to RAL and became the Propulsion SSI for the NSFRV.

In December 2020, Canada issued a Request for Identification (RFID) to select a Deck Equipment SSI for recommendation by Canada to work with RAL. Hawboldt Industries Ltd. were recommended to RAL and became the Propulsion SSI for the NSFRV.

Approximate Vessel Particulars

The new NSFRV has the following design particulars:

1. Length = 32 m (as per current concept development parameters)
2. Beam, moulded = 10.5 m
3. Depth, moulded = 4.00 m
4. Hull draft, nominal = 3.4 m
5. Complement = 11 total
6. Endurance = operational 12 hours per day for up to 14 days before resupply and/or crew change
7. Days of operation = 270 days (including while on program, and alongside)

Environmental Conditions

The new NSFRV will operate in the following environmental conditions:

1. Service area – St. Lawrence River, and Gulf of St. Lawrence
2. Months of operation – April to December

3. Maximum ambient air temperature = 35°C
4. Minimum ambient air temperature = -30°C
5. Maximum sea water temperature = 0°C
6. Minimum sea water temperature = 25°C
7. Transit through ice – transit through strips of New ice <10 cm in thickness. These ice strips shall be comprised of small ice cakes (<2m) as defined by EC SEA Ice coding egg. The vessel will not be used to break ice.

Applicable Regulations and Classifications

The new NSFRV will be under 500 gross tonnage and will not be engaged on international voyages. As such, it will be designed and constructed in accordance with the following regulations and classifications:

1. Built to Class
2. Transport Canada Home Trade Class II
3. Transport Canada Near Coastal Voyage Class I
4. Canada Shipping Act (CSA) 2001 – Marine Machinery Regulations (SOR/90-264)
5. Canada Shipping Act (CSA) 2001 – Vessel Pollution and Dangerous Chemicals Regulations, Division 6 – Air
6. Transport Canada TP-127 – Ships Electrical Standards

Supporting Technical Documentation

Three documents will be made available upon request to eligible shipyards capable of building a vessel of this size via email from the Contracting Officer:

- 1) General Arrangement (GA)
- 2) 3D Rendering
- 3) Draft Build RFP

NSFRV Vessel Design and Systems Status

As the design agent, Robert Allen LTD (RAL) has advanced the design of a number of systems. The design and integration into the vessel has been performed with the support of Single System Integrators (SSI) for the hybrid propulsion system and deck equipment. Most of the vessel design and systems are at a stage where Canada can now proceed with the next phase of the project. Described below are the status of vessel design and system development thus far.

Status of vessel design and systems:

Hullform: The design and development of the hullform is basically complete. The hullform has undergone extensive numerical and physical modelling to confirm the design. Only issue related to production are expected.

Main propulsion system: With the support from the Single System Integrator (SSI) Aspen Kemp and Associates (AKA) and the selection of main components (propulsors, engines, exhaust systems, mounting) the main propulsion system design and integration of equipment has been completed. Only issue related to production are expected.

Electrical system (including ESS) With the support from the Single System Integrator (SSI) Aspen Kemp and Associates (AKA) and the selection of ESS batteries, the main electrical distribution system and primary components has been functionally complete. ELA and primary SLD are complete and equipment sizing and design integration has been completed. The final design of the main components will need to be completed along with the secondary distribution system. A number of minor equipment selection are still to be finalized. And the ELA and SLD will need to be completed and updated based on final selection of all equipment other than that supplied by SSIs, AKA and Hawboldt.

Deck equipment: With support from the Single System Integrator (SSI) firm Hawboldt, all of the major deck equipment Including HPU sizing) has been sized and functionally designed and integrated into the vessel has been completed. The final design of the main components will need to be completed along with the design of complete hydraulic package.

Structure: The primary structural design of the vessel is complete and accepted by Class. Only issue related to production are expected. Final design of structure (minor structure, foundations, brackets) is incomplete.

Mechanical systems: The functional design of all mechanical systems has been complete based on indicative equipment, assumed pipe routings, HVAC trunking and equipment layout. Final design and equipment selection of all mechanical systems is required.

General Arrangement: The functional design of the general arrangement has been complete based on indicative equipment, assumed pipe routings, HVAC trunking and equipment layout. Only issue related to production and final equipment selection are expected.

Machinery Arrangement: The layout of the primary equipment supplied by SSIs is complete. The layout of the machinery rooms is functionally complete indicative equipment, assumed pipe and cable routings, HVAC trunking, workflow, removal routes and maintenance envelops. Issue related to production and final equipment selection are expected.

Weight and Stability: A detailed weight estimate and stability assessment of the vessel has been completed based on primary structure, major equipment and allowances for other equipment and outfitting. Based on this conservative margins have been included in weight to ensure vessel stability requirements are met.

Wheelhouse and Consoles: The functional design and arrangement of the wheelhouse and consoles has been complete based on indicative equipment list, CCG operational requirements and operator feedback. Only issue related to production and final equipment selection are

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expected. Extensive modeling and design development has been completed to confirm console location and sightlines required for navigation and workdeck operation.

Design Appraisal: The entire Contract Design package has been reviewed and appraised by Lloyd's Register.

Annex B – Questions to Industry

DIDs
<ol style="list-style-type: none">1. In reviewing the series of project management DIDs (M DIDs) do you have any specific concerns?2. In reviewing the series of quality DIDs (Q DIDs) do you have any specific concerns?3. In reviewing the series of integrated logistics support DIDs (ILS DIDs) do you have any specific concerns?
Design completion
<ol style="list-style-type: none">1. What is the scope of a 'design review phase, in your eyes?2. Do you see any issues with being able to complete the design review phase of the design?3. How long do you foresee for the design review phase to be completed?4. Do you see any issues with the 3 design phases detailed in the draft RFP:<ol style="list-style-type: none">a. Design Review,b. Complete Design Development, andc. Production Design
Build concerns
<ol style="list-style-type: none">1. Do you have any concerns about the building the vessel based on your review of the design?2. If yes to #1, do you have any recommended actions on how to address these concerns as we finalize the design prior to issuing the Build RFP?3. Does your shipyard currently have the capacity to build a vessel of this size?4. Canada posted two competitive processes (Request for Identification of Potential Suppliers) to select Single System Integrators (SSIs) for the propulsion system and deck equipment for the new NSFRV. These SSIs have supported design development and equipment selection during the design of the vessel. The scope of equipment to be provided by each of these SSIs was spelled out during their respective competitive selection processes and can be seen in Annex A. The intent going forward is for these SSIs to provide equipment for their respective systems and integrate it into the NSFRVs during the build. Do you have any concerns as we carry this approach forward into the

build?

5. Canada will request a list of major equipment as part of the Build RFP that will include prices. Do you have any concerns providing this information?

Basis of Payment

1. Do you have any concerns about the basis of payment for the design work portion of the work prior to build?
2. Do you have any concerns about the financial arrangements with the named SSIs?
3. Do you have any concerns about the basis of payment for the actual build work? Are the payment milestones at Annex E suitably aligned with when a shipyard needs money to order materials, engage subcontractors etc?

SSIs

1. The Contract Design package developed by RAL/AKA/ Hawboldt and GGC will be a combination of fully develop engineering ready for production design (main propulsion arrangement, main propulsion electrical arrangement, hullform, primary structure, deck equipment) and many design areas that require completion before Production Design and Construction (mechanical auxiliary systems, electrical distribution, console design and layout, HVAC). Do you see any issues with this?
2. Will you have any issues completing the design development and equipment integration as required?
3. Do you have any issues with the draft RFP requirement to engage SSI for specific systems as we carry them forward into the build phase as described in the SOW, para 9.1.b?
4. Do you any issues with being able to respond to an draft RFP that includes the above contract design package?
5. How might COVID impact your procurement process, capacity, costs and schedule?

ILS

1. How would you approach the ILS work if it is included in the draft RFP?

Annex C – Statement of Work (SOW)

Attached in a separate document

Annex D – Terms and Conditions

The below items are included for discussion purposes only and supplier feedback will inform the development and finalization of the Terms and Conditions included in the final Request for Proposal.

Basis of Selection

The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 70% for the technical merit and 30% for the price.

Financial Bid

Bidders must submit cost information for all line items consisting of the Propulsion Single System Integrator (SSI) scope of supply and the Deck Equipment SSI Scope of Supply in order to be considered compliant. However, the cost of these line items will not be evaluated.

Discretionary Audit - SACC Manual clause C0705C, (2010-01-11)

The following are subject to government audit before or after payment is made:

- (1) The amount claimed under the Contract, as computed in accordance with the Basis of Payment, including time charged.
- (2) The accuracy of the Contractor's time recording system.
- (3) The estimated amount of profit in any firm-priced element, firm time rate, firm overhead rate, or firm salary multiplier, for which the Contractor has provided the appropriate certification. The purpose of the audit is to determine whether the actual profit earned on a single contract if only one exists, or the aggregate of actual profit earned by the Contractor on a series of negotiated contracts containing one or more of the prices, time rates or multipliers mentioned above, during a particular period selected, is reasonable and justifiable based on the estimated amount of profit included in earlier price or rate certification(s).
- (4) Any firm-priced element, firm time rate, firm overhead rate, or firm salary multiplier for which the Contractor has provided a "most favored customer" certification. The purpose of such audit is to determine whether the Contractor has charged anyone else, including the Contractor's most favored customer, lower prices, rates or multipliers, for like quality and quantity of goods or services.

Any payments made pending completion of the audit must be regarded as interim payments only and must be adjusted to the extent necessary to reflect the results of the said audit. If there has been any overpayment, the Contractor must repay Canada the amount found to be in excess.\

Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-andguidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada. Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 2020-05-28 Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Intellectual Property

4007 (2010-08-16), Canada to Own Intellectual Property Rights in Foreground Information, apply to and form part of the Contract.

Basis for Canada's Ownership Of Intellectual Property:

The Canadian Coast Guard and The Department of Fisheries and Oceans has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds:

Policy on Title to Intellectual Property Arising Under Crown Procurement Contracts:

Treasury Board Policy Section 6 Exceptions to Contractor Ownership sub-section: 6.5 where the Foreground consists of material subject to copyright, with the exception of computer software and all documentation pertaining to that software.

Additional Single System Integrators (SSIs) – resumes required

As identified, in the Statement of Work, the Bidder will require SSIs for:

- a) Heating, Ventilation & Air Conditioning (HVAC) System Integrator
- b) Ship's Control & Monitoring System (SCMS)
- c) Bridge Equipment (Navigation, Communication, and Science)

Corporate resumes for these SSIs will be required as part of the bid. SSIs will be required and resumes provided to confirm experience

Annex E – Milestone Payment Schedule

Milestone No.	Description or deliverable(s)	%	Firm Unit Price (Applicable Taxes Extra)	Total Firm Price (Applicable Taxes Extra)
1	Kick-Off Meeting	0.5%	\$	\$
2	Phase 1A: Design Review completed and accepted by Canada	2%	\$	\$
3	Phase 1B: Continued Design Development completed and accepted by Canada	2%	\$	\$
4	Phase 1C: Production Engineering completed and accepted by Canada	2%	\$	\$
5	Delivery of material - 90% of structural steel by weight	10%	\$	\$
6	Delivery of Propulsion Machinery by ship set to shipyard - prime mover to propulsor inclusive	8%	\$	\$
7	Delivery of Electrical Equipment Package by ship set - generator sets, main switchboard and energy storage system (ESS)	9%	\$	\$
8	Hull, deck and wheelhouse enclosed and accepted by Canada	10%	\$	\$
9	Prime movers installed and accepted by Canada	10%	\$	\$
10	Vessel launched, all Test and Trials completed and accepted by Canada	14.5%	\$	\$
11	Provisional Acceptance complete and accepted by Canada	5%	\$	\$
12	Delivery and Acceptance at destination	15%	\$	\$
13	Delivery of operational spares	2%	\$	\$

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14	All Technical Data Package elements delivered and accepted by Canada	3%	\$	\$
15	All Training completed and accepted by Canada	3%	\$	\$
16	Completion of the 12 month warranty period	4%	\$	\$



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne



ANNEX C

Statement of Work (SOW) Near-Shore Fishery Research Vessel (NSFRV) Build



Safety First, Service Always

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1. Introduction

- 1.1 The Department of Fisheries and Oceans (DFO) and the Canadian Coast Guard (CCG) have a requirement for one (1) new NSFRV. The primary function of the NSFRV is oceanographic science. Secondary missions require capabilities consistent with search and rescue and environmental response.
- 1.2 The contract design package developed by the Robert Allan Ltd. (RAL) as an output of the NSFRV Design Contract is a key input into this Contract.

2. Objective

- 2.1 The objective of the Work specified is to carry out the shipbuilding effort to construct and equip one (1) NSFRV and deliver the associated deliverables defined in the Contract.

3. Scope

- 3.1 The Contractor must complete the design engineering for the new NSFRV and then construct and deliver one (1) NSFRV to Canada. Prior to commencing the build, the Contractor must complete the design such that it is ready for production. The Design Contract Technical Data Package comprises the following:
 - a) Design Contract Specification
 - b) Design Drawings
 - c) Classification Society appraised drawings
 - d) 3D Model
- 3.2 The Contract will be delivered in two phases: Phase 1 – Design Completion, and Phase 2 – Build. Phase 1 must be completed prior to commencing Phase 2.
- 3.3 The Contractor must also deliver all the Integrated Logistics Support (ILS) documentation and training to support the entry into service of the Vessel.
- 3.4 The Contractor must conduct all the acceptance activities necessary to demonstrate compliance with the technical requirements as defined in the final production design package. Omission by Canada to list a document, regulation, standard or certificate does not relieve the Contractor of responsibility for compliance with any applicable rule, regulation or certificate for a vessel operating in Canadian waters on the delivery of the NSFRV.
- 3.5 The SOW consists of this document and the following appendices:
 - a) Appendix A-1 Contract Data Requirements List (CDRL)
 - b) Appendix A-2 Data Item Descriptions (DIDs)
- 3.6 The CDRL and DIDs for the Work are attached at Appendices A-1 and A-2 respectively. DIDs define the individual Deliverables that the Contractor must provide to Canada at the times specified in the CDRL in accordance with this Contract. DIDs include: the format, process, delivery schedule and level of detail required to satisfy the requirements of each individual deliverable.
- 3.7 The Contractor must carry out and document all the Work using the International Standards units of measurements (commonly known as the Metric System) with the exception of material, equipment and machinery where the Imperial system of measurement is standard for the manufacturer.
- 3.8 The Contractor must integrate into the Vessel all materials, machinery, equipment and components identified in the NSFRV Design Contract specification.

4. Report and Drawing Formats

- 4.1 The Contractor must prepare and submit to Canada all drawings, calculations and associated lists in accordance with DID **M-013 Design Drawings**. The Contractor must maintain and control the configuration of the drawings to reflect the Work under this Contract until the end of the Warranty period for the Vessel.
- 4.2 Drawings that must be delivered to Canada for review or acceptance are identified in the DIDs. Canada may request, by written notice from the Contracting Authority, the delivery of other drawings if created by the Contractor as part of the Work, or if provided to the Contractor by a Subcontractor as part of the Work, for Canada's review. If such drawings are requested, the Contractor must provide them within five (5) Business Days.
- 4.3 Drawings that are being submitted to the Classification Society or Transport Canada, for approval or guidance, must also be provided concurrently to the Technical Authority for information.
- 4.4 Reports, calculations and associated data produced or revised during the Work must be submitted in accordance with their respective DIDs.
5. **Electronic Formats**
- 5.1 Unless otherwise specified in individual DIDs, electronic copies of deliverables must be capable of being viewed using one or more of the following software versions where such deliverables would customarily be capable of being viewed or edited using such applications:
- a) Microsoft Office Suite 2010, including Word, Excel and PowerPoint
 - b) McNeel Rhinoceros ('Rhino') 5.0
 - c) AutoDesk Navisworks 2013
 - d) AutoDesk AutoCAD 2013
 - e) AutoDesk Design Review 2013
 - f) Adobe Acrobat version 11
- 5.2 All deliverables must be in English. Where available, documents available in English and French must be delivered in both languages.
6. **Design Development to Date**
- 6.1.1 Much of the NSFRV concept development work was developed internally by CCG Vessel Procurement Engineering Support (VP-ES). RAL was the designer for the Contract Design and it has been appraised by class society.
7. **Phase 1 – Design Completion**
- 7.1.1 Phase 1 will be sub-divided into three phases:
- a) Phase 1A: Design Review
 - b) Phase 1B Complete Design Development
 - c) Phase 1C: Production Engineering
- 7.1.2 The purpose of Phase 1A is to review and understand the design development to date. No design advancement will occur during Phase 1A. The Contractor will liaise with Canada and SSIs to understand design development to date and comment on areas of concern in the design. The Contractor and its SSIs should review the design to further develop their familiarity with the design and then have a series of system kick-off meetings (defined below). Attachment 1 below offers an overview of the maturity each key system to date.
- 7.1.3 If the Contractor determines that specific requirements or design aspects need to be revisited for producibility or fabrication standpoint, the change process must be used. The onus is on

the Contractor to rationalize the issue. Once understood and accepted by Canada, The Contractor is responsible for developing a solution. Canada must also accept the solution.

- 7.1.4 Once the Contractor and Canada confirm that the design is mutually understood by all, Phase 1A is complete.
- 7.1.5 Phase 1B then entails design development to complete the design for the areas where the design must be matured to the point it is complete ready to be constructed.
- 7.1.6 Phase 1c then entails production engineering

8. **Phase 2 – Build**

- 8.1.1 Phase 2 is defined by the build of the vessel and most deliverables need only be updated as required during the Build Phase.

9. **Systems Integration**

- 9.1 Canada ran competitive processes to select a number of SSIs during the Design Contract. The Contractor must use the same single systems integrators used during the NSFRV Design Contract. These SSIs must support the installation and commission of all equipment within their system scope during the Phase 2 – Build. During Phase 1, The SSIs must continue to design, integrate, and conduct performance verification of the following systems as the design develops for the following pre-selected SSIs:

- a) Propulsion SSI (Aspin Kemp and Associates)(Ref # F7013-200032/B)
- b) Deck Equipment SSI (Hawboldt Industries Ltd.)(Ref # F7013-200032/C)

Canada ran two competitive a processes (Request for Identification of Potential Suppliers) to select Single System Integrators (SSIs) for the propulsion system and deck equipment for the new NSFRV. These SSIs have supported the design development and equipment selection during the design of the vessel. The scope of equipment to be provided by each of these SSIs was spelled out during their respective competitive selection processes and can be seen in Appendix 1 to Annex A. The intent going forward is for these SSIs to provide equipment for their respective systems and integrate it into the NSFRVs during the build.

The Contractor will have to engage and use SSIs to design, integrate, and conduct performance verification of the following systems as the design develops for the following systems:

- a) Heating, Ventilation & Air Conditioning (HVAC) System Integrator
- b) Ship's Control & Monitoring System (SCMS)
- c) Bridge Equipment (Navigation, Communication, and Science)

10. **Project Management**

10.1 **Plans**

- 10.1.1 The Contractor must manage the project using a Project Management system reflecting industry best practices, such as the Project Management Body of Knowledge (PMBOK) or equivalent.
- 10.1.2 The Contractor must update the existing Project Management Plan (PMP) and its subordinate plans developed as part of the bid as defined in DIDs **M-001 Project Management Plan** as required. Specifically, key personnel should be updated as it evolve for ease of communication during the Contract.
- 10.1.3 The Contractor must provide a Master Plan and Schedule in accordance with DID **M-002 Master Plan and Schedule**. The Master Schedule must allow time for Canada to review and

respond to submitted deliverables in accordance with individual DIDs. The required review periods are listed in the CDRL.

- 10.1.4 The Master Plan and subordinate plans as defined herein and in the CDRL are to be kept current for the duration of this Contract and remain fully reflective of how the Work is conducted and consistent with other plans. If one aspect of a particular plan as defined in the DID is altered in any way, the deliverable must be updated accordingly and communicated via progress updates as defined below. Urgent matters should be brought to the attention of Canada as they arise.
- 10.1.5 Once construction has commenced, the Contractor must submit at least twenty-five (25) colour photographs of the Vessel with each monthly Progress Report in accordance with **DID M-019 Photographs**.
- 10.1.6 The Contractor must provide scale models of the as-built NSFRV delivered under this Contract. The scale models must be provided in accordance with **DID M-020 Scale Models**.

10.2 Reports

10.2.1 Progress Reporting

- 10.2.2 The Contractor must submit a Progress Report in accordance with **DID M-011 Progress Reporting** every six weeks commencing after the kick-off meeting (defined below).

11. Meetings

- 11.1 The Contractor must schedule meetings in consultation with Canada. Meetings must be held on mutually agreed upon dates. Meetings may be held concurrently and in coordination with other meetings held for the NSFRV.
- 11.2 The Contractor must develop and deliver meeting agendas in accordance with **DID M-007 Meeting Agendas** for all meetings specified in this SOW.
- 11.3 The Contractor must record the minutes of all meetings summarizing the discussions and recording decisions reached in accordance with **DID M-008 Meeting Minutes**. Minutes will be signed off by the Contracting Authority, Technical Authority and by the Contractor.
- 11.4 Action items must be identified during meetings and tracked by the Contractor in an action item register. Each action item's status must be identified in subsequent meetings until the action item is closed, as agreed upon by Canada and the Contractor.
- 11.5 The Contractor must provide the facilities, materials and services reasonably required for the conduct of all meetings. All meetings must be held at the Contractor's premises, unless otherwise agreed to beforehand, and must be co-chaired by Canada and the Contractor.
- 11.6 Despite the conduct of meetings, urgent matters that require the immediate attention of Canada must be brought to the attention of the Technical Authority and Contracting Authority promptly. The Contractor must not await the next formal meeting to communicate such matters to Canada.
- 11.7 **Kick-off Meetings**
 - 11.7.1 The Contractor must set up a kick-off meeting with Canada no later than two (2) weeks following contract award. The purpose is to introduce the teams and review the contract and discuss next steps.
 - 11.7.2 As described above at 7.1.2, the Contractor must setup system level kick-off meetings within a month of contract award. The kick-off meetings are also to include electrical/hybrid systems and for the following systems:
 - a) Propulsion
 - b) Deck Equipment

- c) HVAC
- d) Bridge Equipment

Attendees, must include SSIs and system OPIs from VP-ES. The purpose is to review the package for the respective systems and for the Contractor to understand design development to date.

11.8 **Progress Review Meetings (PRMs)/ Technical Review Meetings (TRMs)**

- 11.8.1 The Contractor must convene PRMs every six (6) weeks to be held via teleconference or in person at the Contractor's facilities. The purpose of the PRMs is to discuss cost, schedule, quality of the Work, progress, risks, issues and any other topics that affect the conduct of the Work. The PRM attendees from Canada will include the Contracting Authority, Technical Authority, and Inspection Authority and other attendees as indicated by Canada. The purpose of the TRMs is to discuss and resolve any technical issues with the design, system engineering, construction, ILS (as defined in section 15 below as ILS) and any other technical issues that affect the progress of the Work. Canada's participants for the TRM must include the Contracting Authority, Technical Authority, Inspection Authority, and other attendees as indicated by Canada.
- 11.8.2 The date for the PRMs/TRMs must be confirmed with Canada at least ten (10) Business Days prior to the meeting.
- 11.8.3 The Contractor must present Progress Report every six (6) weeks for the period at each PRM in accordance with the requirements of DID **M-011 Progress Reporting**. Presentations from other meetings, included as attachments to the Progress Report in accordance with DID **M-011 Progress Reporting**, need not be presented at the PRM. The TRM portions will be driven by technical deliverables from the T DIDs as well as consideration for planning quality activities for inspections, test and trials.

11.9 **Builder's Dock Trial Meeting (BDTM)**

- 11.9.1 Prior to the conduct of the Builder's Dock Trials (BDTs), the Contractor must convene a BDTM. The BDTM must be a planning meeting to conduct a final review of the deliverables for DIDs **Q-006 Acceptance Plan, Q-003 Tests and Trials Plans** and **Q-005 Tests and Trials Agendas** and ensure overall readiness to commence BDTs.

11.10 **Builder's Sea Trial Meeting (BSTM)**

- 11.10.1 Prior to the conduct of the Builder's Sea Trials (BSTs), the Contractor must convene a BSTM. The BSTM must be a planning meeting to conduct a final review of the DID **Q-003 Tests and Trials Plans** and **Q-005 Test and Trials Agendas** and ensure overall readiness to commence BSTs.

11.11 **Acceptance Conference**

- 11.11.1 The Contractor must convene an acceptance conference to mark the end of acceptance, to confirm that all acceptance activities are complete as defined in DID **Q-006 Acceptance Plan** and to formally deliver the NSFRV to Canada.

11.12 **Build Close-Out Meeting (BCOM)**

- 11.12.1 The Contractor must convene the BCOM to demonstrate that all Work is complete and all deliverables have been received and accepted.

12. **Quality Management**

- 12.1 The Contractor must provide a Quality Plan (QP) delivered to Canada as part of the bid Contract in accordance with DID **Q-001 Quality Plan**. The QP must be consistent with and

- subordinate to the PMP and prepared in accordance with the current version of ISO 10005 Quality Management - Guidelines for Quality Plans.
- 12.2 Upon acceptance of the updates to the QP by Canada, the Contractor must conduct the Work in accordance with the QP. The Contractor must make appropriate amendments to the QP throughout the term of the Contract to reflect current and planned quality management activities.
13. **Build**
- 13.1 The Contractor must build and equip one (1) NSFRV in accordance with the requirements defined in the Construction Specification and as reflected in the Technical Baseline to be delivered at the end of Phase 1. The Build Plan must be kept current and in accordance with **DID T-901 Build Plan**.
- 13.2 The Contractor must rigorously manage any changes to the Technical Baseline during the build of the NSFRV in accordance with **DID M-006 Configuration and Change Management Plan**.
- 13.3 The Contractor must produce and deliver an as-built Construction Specification reflecting the final NSFRV as-built configuration in accordance with **DID M-012 Final Construction Specification**.
14. **Engineering**
- 14.1 The Contractor must produce and deliver a final set of design drawings in accordance with **DID T-075 Final Design Drawing Package**.
- 14.2 For all other engineering deliverables (Technical level or 'T DIDS') not specifically addressed in the SOW, the Contractor must provide an updated deliverable on an as required basis for the duration of this Contract if the final deliverable provided during the NSFRV CE Contract has changed and the deliverable is therefore no longer current.
- 14.3 The Contractor must produce revised Design Reports, as required, and in accordance with **DID T-002 Design Reports**.
15. **Margins and Weight Control Program**
- 15.1 The Contractor must update and implement a Weight Control Program developed as part of the Work.
- 15.2 The Contractor must demonstrate the accuracy of the weight estimates and actual weights and how this applies to each entry in the Weight Report in accordance with **DID T-102 Weight Report**. The Contractor must implement a weight margin plan in accordance with **DID T-101 Weight Control Program** to ensure that the Vessel, as-built, is within the weight and center of gravity limitations as required in the Technical Baseline.
- 15.3 Throughout the Work, the Vessel weight estimate is to be updated and submitted to the Technical Authority in accordance with **DID T-102 Weight Report**. The weights and centers of gravity of items that are part of the Vessel must be determined and reflected in the Weight Report. The Weight Report must clearly state the actual known and estimated weights used to determine the Vessel weight. The consumption of margins as well as the rationale for consuming margins must be documented therein. All weight control measures that are in use must be indicated in the report.
- 15.4 For materials, components, and equipment that are not individually measured, the Contractor must determine the mass on a selective or sampling basis, as determined by the Contractor, to provide unit weight data.

- 15.5 Where the Contractor uses factors or percentages, such as for estimating and calculating paint, mill tolerance and welding, the Contractor must substantiate these values by supplying background data in support of these calculations.
- 15.6 The Contractor must utilize a margin policy which reflects the levels of confidence in the weight, and is applied individually to each item in the weight report. This weight and moment allowance must account for design changes to the current weight due to ship drawing development, growth of Contractor-furnished material, omissions and errors in the ship drawings, outfitting details, variations between the actual ship and its curves of form, and other similar differences.
- 15.7 Prior to Vessel Acceptance, the Contractor must complete a lightweight survey for the Vessel in accordance with Classification Society Rules and Canadian Regulations, and report the results of this lightweight survey to the Technical Authority.
- 15.8 Upon completion of the NSFRV, the Contractor must conduct an inclining experiment in accordance with Transport Canada Marine Safety and Classification Society rules and regulations.
- 15.9 The Contractor must produce the inclining experiment report and associated calculations and must submit the report to the Technical Authority for review and comment within thirty (30) days of the experiment having been conducted.
- 15.10 The Contractor must conduct and maintain a Stability Analysis in accordance with DID **T-103 Stability Analysis** as required with any modification to the Vessel's configuration.
16. **Noise and Vibration Control Program Plan**
- 16.1 The Contractor must continue to execute the Noise and Vibration Control Plan delivered during the NSFRV CE Contract in accordance with DID **T-073 Noise and Vibration Control Program Plan**.
- 16.2 In the performance of the Work, the Contractor must engage the services of the same professional noise control engineering firm engaged during the NSFRV CE Contract for the development and monitoring of the noise control design and construction incorporated into the Vessel to ensure that the airborne noise, sonar self-noise and radiated noise performance requirements of the Construction Specification are met.
17. **Acceptance**
- 17.1 **Acceptance Objectives**
- 17.1.1 The objectives of acceptance activities are to:
- a) Verify that all requirements defined in the Construction Specification and related drawings have been met in accordance with DID **T-000 Compliance Matrix**.
 - b) Demonstrate that all equipment and systems on board the Vessel operate correctly in accordance with the design intent and Original Equipment Manufacturer (OEM) or integrator instructions.
 - c) Ensure the Vessel has all necessary certifications as per Regulatory Bodies and Classification Society requirements.
 - d) Ensure the Vessel is delivered to Canada:

- i. Complete and free of all defects or deficiencies except for outstanding work agreed to and listed in the PWGSC 1105 form
 - ii. clean and tidy
 - iii. complete with load out items prepared for custody transfer in accordance with this Contract
- e) Confirm that all other deliverables to be provided at acceptance in the CDRL have been received and accepted by Canada (Except for those agreed to and listed in the PWGSC 1105 form).

17.2 **General**

17.2.1 The Contractor must provide an Acceptance Plan in accordance with DID **Q-006 Acceptance Plan** to reflect the process for Acceptance that spells out the schedule of Tests and Trials and inspection leading up to overall acceptance of the Vessel.

17.2.2 All activities in the Acceptance Plan (DID Q-006) must be included in the NSFRV Integrated Master Schedule (DID M-002). The schedule must at a minimum include the development, review and approval of the acceptance activities and each of the individual acceptance activities. The schedule must clearly show the integration of the entirety of the acceptance. The Contractor must notify the Inspection Authority of all acceptance activities in accordance with this Contract. The Inspection Authority must witness all acceptance activities although the Inspection Authority may waive their attendance at a specific Test, Trial, or Inspection by informing the Contractor in writing.

17.3 **Requirements Demonstration and Verification**

17.3.1 The agreed Acceptance Plan delivered as part of the NSFRV CE Contract defines the process for requirements demonstration and verification. The Contractor must use the DID **T-000 Compliance Matrix** in accordance with the Acceptance Plan.

17.3.2 Demonstration of requirements must progressively build on the Compliance Matrix delivered as part of the NSFRV Design Contract. Demonstration of requirements under this Contract may take the form of the following activities:

- a) Demonstrations
- b) Inspections (Inspection Authority and Regulatory bodies)
- c) Functional and configuration audits
- d) Factory Acceptance Tests (FATs)
- e) Tests and Trials

17.3.3 In general, verification of requirements must take a structured approach commencing with design reviews demonstrating that the equipment, systems and Vessel as designed meet the requirements. Design reviews will be followed by physical audits or Inspections demonstrating that the equipment, systems and Vessel have been constructed in accordance with the design. Tests, Trials and demonstrations will then follow demonstrating that the equipment, systems and Vessel as an integrated system function correctly as designed and as contemplated by the OEM or integrator.

17.4 **Test and Trials**

17.4.1 The Contractor must organize and conduct to the satisfaction of the Inspection Authority, Classification Society and Regulatory Bodies a comprehensive Test and Trials program, in accordance with DID **Q-003 Tests and Trials Plan** to progressively demonstrate that the Vessel has been constructed in accordance with the Technical Baseline and fully complies with Classification Society, Transport Canada, other Regulatory Bodies, and the updated Construction Specification and that all Vessel equipment and systems operate correctly.

- 17.4.2 All Tests and Trials must be completed on individual components of the systems, and all identified defects corrected to the satisfaction of the Inspection Authority prior to the commencement of any Test or Trial on that system.
- 17.4.3 The Contractor must conduct Tests and Trials in accordance with the agreed DID **Q-003 Tests and Trials Plan** delivered under the NSFRV CE Contract to enable a logical, systematic progression which ensures that all associated components and equipment are proven prior to subsystems demonstration or testing, and subsystems are proven prior to system demonstration or testing. As a minimum, the Contractor must verify:
- a) Completeness of installation, correct rotation
 - b) Adequacy of power
 - c) Ease of use and power functioning of controls
 - d) Uniformity of speed at any operating condition
 - e) Vibration of equipment or of adjacent piping
 - f) Freedom from noise in conformance with the Noise and Control Plan prepared under the NSFRV CE Contract
 - g) Absence of leaks (fluid, lubricants or gases)
 - h) Calibration and setting of alarm and limit devices
 - i) Adequate strength and stiffness of all machine parts and foundations
- 17.4.4 The Contractor must develop and deliver to Canada, in accordance with DID **Q-005 Tests and Trial Agendas**. agendas for all Tests and Trials activities that will clearly describe the methodologies and procedures to be used for each activity, and will cross reference all applicable Construction Specification requirements.
- 17.4.5 The Contractor must collect data and keep written records of all acceptance activities conducted in accordance with DID **Q-004 Tests and Trials Reports**. Records must be provided to Canada in accordance with DID **T-000 Compliance Matrix**.
- 17.5 **Factory Acceptance Tests**
- 17.5.1 The Contractor must conduct FATs for all systems, machinery and equipment identified in the Acceptance Plan.
- 17.5.2 Shore based Trials, FATs, Tests must be completed in accordance with DIDs **T-000 Compliance Matrix** and **Q-005 Tests and Trials Agendas**. FATs must be conducted on systems and equipment identified in SNAME Technical and Research Bulletin 3-39, Guide for Shop and Installation Tests.
- 17.5.3 Where a Test is required by the Classification Society or Regulatory Bodies, the Contractor must inform Canada in order that Canada may witness the Test in conjunction with the Regulatory Bodies and Classification Society surveyors.
- 17.5.4 The Contractor must provide copies of the FATs procedures and the expected test results consistent with DID **Q-004 Tests and Trials Reports** to the Technical Authority. The agendas must include pass or fail criteria where there is a specified requirement.
- 17.5.5 The Contractor must include in the FAT protocol the systems, machinery and equipment identified as noise critical under through the Contractor's noise control program as identified in the Noise and Control Progress Plan (DID T-073 of the NSFRV CE Contract) and must undergo vendor-responsible FAT noise and vibration characteristics prior to shipment to the Contractor.
- 17.6 **Builder's Dock Trials (BDTs)**

- 17.6.1 The Contractor must provide BDTs procedures to verify the installation and integration of each system in the Vessel in accordance with the agreed Technical Baseline.
- 17.6.2 The Contractor must conduct BDTs for all systems, machinery and equipment identified in the Acceptance Plan delivered in accordance with DID **Q-006 Acceptance Plan**. Agendas must be developed in accordance with DID **Q-005 Tests and Trials Agendas**. Results of the actual testing must be provided in accordance with DID **Q-004 Tests and Trials Reports**. BDT documentation must clearly identify:
- a) Test and Trials Reports showing all Trials have been completed, documented and all trialed equipment or systems certified compliant, not compliant or for information only by the applicable Inspection Authority.
 - b) A report of all defects, deficiencies and deviations from BDT and confirmation that all have been captured in the Defect and Deficiency Register.

17.7 **Builder's Sea Trials (BSTs)**

- 17.7.1 The Contractor must conduct BST for all systems, machinery and equipment identified in the Acceptance Plan. Agendas must be developed in accordance with DID **Q-005 Tests and Trials Agendas**. Results of the actual testing must be provided in accordance with DID **Q-004 Tests and Trials Reports**. BST documentation must clearly identify:
- a) Test and Trials Reports showing all Trials have been completed, documented and all Trialed equipment or systems certified compliant, not compliant or for information only by the applicable Inspection Authority.
 - b) A report of all defects, deficiencies and deviations from BST and confirmation that all have been captured in the Defect and Deficiency Register.

17.8 **Regulatory Inspections**

- 17.8.1 The Contractor must update and deliver to Canada a Regulatory Inspection Plan in accordance with DID **Q-002 Regulatory Inspection Plan**. The Regulatory Inspection Plan must address when and how the Contractor will schedule and coordinate all inspections by the Classification Society, Transport Canada Marine Safety, and any other Regulatory Bodies involved in assessing the Vessel for compliance.
- 17.8.2 The Contractor must deliver certificates in accordance with DID **M-018 Project Design Document and Certificates**.

17.9 **Inspections**

- 17.9.1 As part of the agreed Acceptance Plan (delivered under the NSFRV CE Contract), the Contractor must plan and schedule a series of Inspections for the Inspection Authority which progressively serve to:
- a) Demonstrate that the Vessel has been constructed in accordance with the Technical Baseline and Good Shipbuilding Practice.
 - b) Verify that compartments are complete including markings, insulation, paint, labels and all fitted equipment planned to be installed at the time of the inspection.
 - c) Identify defects or deficiencies to be rectified at a later date.
 - d) Verify any tanks which are closed after inspection are properly coated, free from foreign material and debris and free from outstanding defects or deficiencies.
 - e) On completion of BST and prior to Vessel acceptance that loadout material and loose items are on board and properly stowed, or have been delivered to the agreed lay apart store.

- f) Confirm that the Vessel is clean, all defects or deficiencies are resolved or properly recorded in the Defect and Deficiency Register and the Vessel is in all respects ready for delivery to Canada.
- 17.10 Defects and Deficiencies**
- 17.10.1 The Work must be conducted such that little to no outstanding Work remains. Defects or deficiencies must be addressed in a timely manner. Canada will not accept outstanding defects or deficiencies related to safety of personnel, the ability of the Vessel to safely carry out its missions as detailed in the Technical Baseline and agreed during the Construction Engineering phase, or that impact any of the certificates required in accordance with **DID M-018 Project Design Document and Certificates**.
- 17.10.2 Defect and deficiencies must be tracked across all acceptance activities and captured in a single register in accordance with **DID Q-007 Defects and Deficiencies Register (DDR)**.
- 17.10.3 Defects and deficiencies in the DDR must be prioritized in accordance with an agreed upon system of prioritization. The prioritization system must take into account the impact the defect or deficiency has on considerations such as:
- a) Safety of personnel or material
 - b) The ability to successfully verify the operation of the remaining components of the equipment or system
 - c) The ability of the vessel to carry out its mission
 - d) Regulatory Bodies or Classification Society certification(s)
- 17.10.4 Prior to commencing any acceptance activity, the DDR must be reviewed for any outstanding defects and deficiencies related to the equipment or system affected. Normally, there should be no outstanding defects or deficiencies related to an equipment or system undergoing an acceptance activity. If there are outstanding defects or deficiencies, Inspection Authority and the Contractor must review the outstanding items and their priority and agree to allow the acceptance activity to proceed despite the defect or deficiency.
- 18. Integrated Logistic Support**
- 18.1 The Integrated Logistic Support (ILS) scope of the following DIDs may be altered prior to the final release of the RFP.
- 18.2 The Contractor must submit ILS reports in accordance with the CDRL and DIDs accompanying this SOW. ILS is comprised of the activities required to support and operate the Vessel throughout its service life. The ILS elements to be delivered by the Contractor along with the Vessels are described in the following sections and the associated DIDs.
- 18.3 The Contractor must carry out failure modes and effects analysis as required by the Classification Society and Regulatory Bodies.
- 18.4 The Contractor is not responsible for preparing or submitting a Safety Management Plan for the Vessel as part of the Work.
- 18.5 The Contractor must provide an NSFRV Class Manual in accordance with **DID I-001 NSFRV Class Manual**. The Class Manual must explain the function and general arrangement of the Vessel and its major systems and equipment.
- 18.6 The Contractor must deliver the necessary publications to operate and maintain the Vessel in accordance with **DID I-002 Vessel, System, and Equipment Manuals**. The Contractor must also provide Original Equipment Manufacturer manuals in accordance with **DID I-003 Original Equipment Manufacturer (OEM) Manuals**.

- 18.7 The Contractor must provide Trim and Stability booklet reflecting Transport Canada Marine Safety and Classification Society requirements in accordance with DID **I-004 Trim and Stability Booklet**.
- 18.8 The Contractor must provide a Master Equipment List (MEL) that identifies all the systems and equipment fitted on the Vessel in accordance with DID **I-005 Master Equipment List**. The MEL should be locked down at the end of Phase 1 of the Contract and updated as required If the list evolves during Phase 2.
- 18.9 The Contractor must provide an Asset Breakdown Structure (ABS) in accordance with DID **I-006 Asset Breakdown Structure**. The ABS should be locked down at the end of Phase 1 of the Contract and updated as required If the list evolves during Phase 2.
- 18.10 The Contractor must provide a recommended spare parts list in accordance with DID **I-007 Recommended Spare Parts and Materiel List**. The Recommended Spare Parts List must include the following:
- a) Spares which are recommended by the Classification Society to meet guidance on minimum spare gear.
 - b) Identified spares which are required by the Construction Specification
 - c) Recommended spares which are recommended by the Contractor or OEM to ensure continued availability of an equipment or system once in-service.
 - d) Identify the spares, repair parts and material needed to support operations for the first (two) years.
 - e) Identify the spares and material purchased as installation and commissioning spares and/or base spares.
- 18.11 Mandatory spares must be provided by the Contractor as part of the Work. If required to be stowed on board, these spares must be properly identified and protected in good marine quality packaging suitable for the marine environment.
- 18.12 For the recommended spares, Canada will review the list of recommended items and may decide to purchase them from the Contractor as Additional Work.
- 18.13 The Contractor must provide updated Packaging, Handling, Storage, and Transportability information in accordance with DID **I-008 Packaging Handling Storage and Transportability Requirements List**, if the list has evolved since the last deliverable provided to Canada under the NSFRV CE Contract.
- 18.14 The Contractor must demonstrate a cohesive maintenance regime for the Vessel. An updated Initial Maintenance Task List must be provided in accordance with DID **I-009 Initial Maintenance Task List**, if the list or data has changed since the last deliverable provided to Canada under the NSFRV CE Contract and will be vetted via the first of two (2) Expert Panel Reviews (EPRs) to be led by the Contractor to determine the final Maintenance Task List. CCG maintainers will attend the EPR to provide insight. The final suite of agreed upon maintenance tasks or worksheets must be captured in the deliverable for DID **I-010 Maintenance Task Analysis**. The final suite of developed maintenance tasks will be vetted via the second EPR with CCG maintainers. From there, the final maintenance taskings and regime must then be captured in an overall maintenance plan to be developed in accordance with DID **I-011 Maintenance Plan**.
- 18.15 The Contractor must provide updated reliability, maintainability, and supportability data in accordance with DID **I-012 Reliability, Maintainability, and Supportability Data**, if the data has evolved since the last deliverable provided to Canada under the NSFRV CE Contract.

- 18.16 The Contractor must provide a list of any special tools and test equipment required in accordance with DID **I-013 Special Tools and Test Equipment**. The Special Tools and Test Equipment list must include the following:
- a) Mandatory special tools and test equipment which are required to meet minimum Classification Society requirements.
 - b) Mandatory special tools and test equipment which are required by the Construction Specification.
 - c) Recommended special tools and test equipment required to conducted all maintenance activities defined in the Initial Maintenance Task List.
 - d) Identify the special tools and test equipment purchased for installation and commissioning.
- 18.17 Mandatory special tools must be provided by the Contractor as part of the Work. If required to be stowed on board, these tools must be properly identified and protected in good marine quality packaging suitable for marine environments.
- 18.18 For the recommended special tools and test equipment spares, Canada will review the list of recommended items and may decide to purchase them from the Contractor as an Additional Work.
- 18.19 The Contractor must provide a list of Recommended Training in accordance with DID **I-014 Training Recommendation and Analysis**. Following agreement from Canada, the recommended training items and relevant curriculum must be developed in accordance with DID **I-015 Training Materials and Delivery**. Once these plans are finalized, the Contractor must implement them to deliver technical training to Ship's crew and shore- based personnel. The shore-based personnel may consist of up to two (2) CCG electronic technicians and two (2) CCG marine engineers. The ship's crew may consist of up to eight (8) CCG engine room staff and eight (8) CCG deck staff. CCG vessel's staff present for training will have the Transport Canada Marine Certifications appropriate for their positions. Canada will provide a list of the certifications for the Vessel crew as necessary for the training. The selected training must occur prior to the delivery of the Vessel.
- 18.20 The Contractor must provide obsolescence information for applicable equipment in accordance with DID **I-016 Obsolescence Notices**.
- 18.21 For any equipment where the Contractor is informed that obsolescence may be a consideration within two (2) years, the Contractor must describe the procedures to dispose of said equipment. Disposal information for any and all equipment meeting such criteria must be provided in accordance with DID **I-017 Disposal Plan**.
- 18.22 For any hazardous products, Material Safety Data Sheets must be provided in accordance with DID **I-018 Material Safety Data Sheets**.
- 18.23 The Contractor must provide an engineering drawing package that reflects the as-built configuration of the NSFRV, and includes all drawings submitted to the Classification Society for information and all Classification Society approved drawings, in accordance with DID **I-019 As-Fitted Drawing Package**.