



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Bid Receiving - PWGSC / Réception des
soumissions - TPSGC

11 Laurier St. / 11, rue Laurier

Place du Portage, Phase III

Core 0B2 / Noyau 0B2

Gatineau

Québec

K1A 0S5

Bid Fax: (819) 997-9776

LETTER OF INTEREST

LETTRE D'INTÉRÊT

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Ship Construction, Refit and Related
Services/Construction navale, Radoubs et services
connexes

11 Laurier St. / 11, rue Laurier

6C2, Place du Portage

Gatineau

Québec

K1A 0S5

Title - Sujet RFI - Naval Large Tugs	
Solicitation No. - N° de l'invitation W8472-185713/A	Date 2017-12-14
Client Reference No. - N° de référence du client W8472-185713	GETS Ref. No. - N° de réf. de SEAG PW-\$\$MC-017-26581
File No. - N° de dossier 017mc.W8472-185713	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-02-13	
Time Zone Fuseau horaire Eastern Standard Time EST	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Lamothe, Brenda	Buyer Id - Id de l'acheteur 017mc
Telephone No. - N° de téléphone (819) 420-2916 ()	FAX No. - N° de FAX () -
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	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)
The Department of National Defence

For Four (4) Naval Large Tugs

Nature of Request for Information

The Department of National Defence (DND) has a requirement for a total of four Naval Large Tugs for service in Maritime Forces Atlantic (MARLANT) and Maritime Forces Pacific (MARFAC). These Tugs are a critical support component which will be operated by the Queen's Harbour Masters (QHM). Funding has not yet been approved for this project and the Request for Proposal and Contract Award may not be issued.

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. Therefore, whether or not any potential supplier responds to this RFI will not preclude that supplier from participating in any future procurement. Also, the procurement of any of the goods and services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit feedback from industry with respect to the matters described in this RFI.

Nature and Format of Responses Requested

Respondents are requested to provide their comments, concerns and, where applicable, alternative recommendations regarding how the requirements or objectives described in this RFI could be satisfied. Respondents are also invited to provide comments regarding the content, format and/or organization of any draft documents included in this RFI. Respondents are requested to explain any assumptions they make in their responses.

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 comments in response to the RFI.

Treatment of Responses

Use of Responses: Responses will not be formally evaluated. However, the responses received may be used by Canada to develop or inform the procurement strategies or any draft documents contained in this RFI. Canada will review all responses which are received by the RFI closing date. Canada may, in its discretion, review responses received after the RFI closing date.

Review Team: A review team composed of representatives of DND and Public Services and Procurement Canada (PSPC) will review the responses. Canada reserves the right to hire any independent consultant, or use any Government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.

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 may, in its discretion, contact any respondents to follow up with additional questions or for clarification of any aspect of a response.

Contents of this RFI

This RFI contains a draft bid solicitation. These draft solicitation documents remain a work in progress and respondents should not assume that new clauses or requirements will not be added to any bid solicitation that may ultimately be published by Canada. Nor should respondents assume that none of the clauses or requirements will be deleted or revised. Comments regarding any aspect of the following draft solicitation documents are appreciated:

1. Draft Request for Proposal
2. Draft Statement of Work - Annex A
3. Draft Systems Requirements Document - Annex A
4. Draft Contract Data Requirements List - Appendix A to Annex A of the Statement of Work
5. Draft Data Item Descriptions - Appendix B to Annex A of the Statement of Work
6. Canada's Questions to Industry – Appendix A to this RFI
7. Innovation, Science and Economic Development Canada (ISED) information on Economic Leveraging – Appendix B to this RFI

Industry Day

Respondents are invited to join a Webinar Industry Day scheduled for 11:00am EST on January 22nd, 2018 which will be followed by individual one-on-one meetings if requested by Industry on the 23rd, 24th, 25th and 26th of January 2018 which will take place in Ottawa.

If you are interested in joining the Webinar Industry Day please advise the Contracting Authority as Canada will then provide the handouts and any slide presentations to each company. Canada will also need a list of attendees from each company.

The Webinar Industry Day will consist of a project overview presentation, a Canadian Content Value presentation and an open floor question period. This Industry Day will be conducted by the project team which includes the Contracting Authority (PSPC), the Technical Authority (DND), the Project Director (DND), Project Manager, Industrial and Technological Benefits Innovation, Science and Economic Development Canada (ISED) and a Fairness Monitor (Independent 3rd party) working at arms lengths from Naval Large Tug Project.

All items of discussion and all questions and answers from the Industry Day will be documented as meeting minutes and posted on the Buy and Sell as an amendment to this RFI.

If interested in the individual one-on-one meetings taking place in Ottawa on the 23rd, 24th, 25th, and 26th of January, please email your company name, list of attendees and position, your questions, answers to Canada's questions at Appendix A attached to the Contracting authority along with a preferred time and date, and preferred format, either web-based, teleconference or in person. The Contracting Authority will then coordinate a time and date. Canada will also have a conference dial-in number for those companies that cannot attend the one-on-one sessions in person.

The one-on-one sessions will consist of a single two (2) hour long session per company to discuss items that each respondent would like to remain confidential or 'Protected B' or questions and answers that would be confidential or have proprietary rights. However, if there are questions asked by the respondent that are considered not to be confidential or have proprietary rights the Contracting Authority will then indicate to the respondent that this question with answer (originator of questions will not be identified) will be documented and posted onto the Buy and Sell as an amendment to the RFI document. These one-on-one sessions will be hosted by the Contracting Authority (PSPC), the Technical Authority (DND), the Project Director (DND), the Project Manager (ISED) and a Fairness Monitor (Independent 3rd party).

Enquiries

This is not a bid solicitation and therefore, Canada will not necessarily respond to enquiries in writing or by circulating answers to all potential respondents. However, respondents with questions regarding this RFI may direct their enquiries to:

Contracting Authority:	Brenda Lamothe
E-mail Address:	brenda.lamothe@pwgsc-tpgsc.gc.ca

All communications regarding this Request for Information must be directed to the Contracting Authority to ensure fair and transparent treatment of all respondents.

Submission of Responses

Time and Place for Submission of Responses: Respondents interested in providing a response should deliver it by the close of business on February 13th, 2018 to the following address:

Brenda Lamothe
Public Services and Procurement Canada
Marine Services and Small Vessel Sector,
Small Vessel Construction Division,
Place du Portage, Phase III, 6C2,

11 Laurier Street,
Gatineau, Quebec K1A 0S5

Responsibility for Timely Delivery: Each respondent is solely responsible for ensuring its response is delivered on time to the correct location.

Identification of Response: Each respondent should ensure that its name, company representative, return address, the solicitation number and the closing date appear legibly on the outside of the response.

Appendix “A” Canada’s Questions to Industry

1. Can you provide feedback on the Bid Evaluation Plan and Contractor Selection Methodology, the Mandatory Evaluation Requirements (technical, management, financial, certifications) and the labour category and labour rates?
2. Are there any financial requirements or Shipyard capability requirement issues as defined in the RFI documentation?
3. Is the Bid validity period timeframe too long? What is maximum timeframe for Bid validity that the potential bidder can accommodate?
4. Do you see any issues or concerns with the Milestone schedule or percentages of payment (see Annex B Basis of Payment)?
5. What is the Shipyard capacity and ability to meet the current schedule?
6. Are there any issues with allowing Canada Intellectual Property ‘use of data rights’?
7. Are there any specific risks/issues with having DND as a client?
8. Are there any issues on providing a cost breakdown with the bid submission proposal?
9. Are there any issues with accommodating an on-site representative as required by Canada, up to full time for the duration of the contract?
10. Can the respondents review and provide comments on the Statement of Work (SOW), the Systems Requirements Document (SRD), the Contract Data Requirements List (CDRL) and the data deliverables described in the Data Item Descriptions (DID) as part of this RFI?
11. It is the intent of Canada to procure commercial-off-the-shelf tugs. Are there any technical design requirements specified in the SRD which translate to design customization?
12. Are there any comments on the requirements for meetings or design reviews?
13. Are there any long lead items associated with the vessel construction? If yes, how may they affect the schedule?
14. Are there any transportation/delivery issues and how they may affect the schedule (e.g. winter delivery from the great lakes or requested delivery method as described in the RFI documentation, specifically the draft RFP)?
15. What is the estimated time required to complete Bid Submission?
16. Are there any issues with Canada providing items/equipment as Government Supplied Material? Are there any resultant design impacts?
17. Are there any issues with regards to the Welding and Certifications required at bid?
18. Canada plans to maximize opportunities for the NLT procurement. To do this, the Contractor will use materials and equipment which contain a minimum of 30% Canadian Content for the work as outlined in the Statement of Work, for the length of the contract. What are your company’s views on meeting a contractual commitment for a minimum of 30% Canadian Content for materials and equipment on the Naval Large Tugs (NLT)?
19. Canada sees value in weighting this requirement while evaluating the bidders’ ability to use materials and equipment containing Canadian Content.
In your opinion, what would be the best way to ensure the highest percentage of Canadian Content for materials and equipment are used?

20. The contractor will ensure that a minimum of at least 75% of the workforce carrying out the work is Canadian, for the work as outlined in the Statement of Work, for the length of the contract.

What are your company's views on meeting a contractual commitment that a minimum of at least **75%** of the workforce carrying out the work is Canadian on the NLT?

Canadian means Canadian citizens and permanent residents as defined in the *Immigration and Refugee Protection Act 2001, c.27*

21. What are the assurances that you will meet the commitment of Canadian labour and Canadian Content for the materials and equipment?

22. Canada is considering using the "Phase Bid Compliance Process":

<https://buyandsell.gc.ca/attention-government-of-canada-suppliers-and-buyers-public-services-and-procurement-canada-is-introducing-a-phased-bid-compliance-process>

What are your views or comments on this process?

Appendix B

Naval Large Tugs

Definitions

Canadian means Canadian citizens, and permanent residents as defined in the *Immigration and Refugee Protection Act 2001, c.27*.

Canadian Content means the value of a product or service that involves Canadian costs, using the methods outlined in Annex X.

Obligation

1. For each year during the term of the Contract, the Contractor must ensure that:
 - a. at least 75% of the workforce carrying out the Work is Canadian; and
 - b. at least 30% of the materials and equipment used in carrying out the Work contains Canadian Content.

Reporting Requirement

1. The Contractor shall provide a report [30 days] after the delivery of the first and third vessel, on the results of the obligation contained in [Article 1].
2. Canada reserves the right to review compliance with this requirement.
 - 2.1. When the review is undertaken, an overview and status of work performed on the project will be requested from the Contractor.
 - 2.2. To support the review, the Contractor will keep all relevant records that could be used as evidence to provide to Canada, of work performed by Canadians and Canadian Content, until the expiration of three (3) years after final payment under the Contract, or until settlement of all outstanding claims and disputes under the Contract, whichever is later. All such records and documentation must at all times during the retention period be open to audit, inspection and examination by the representatives of Canada, who may make copies and take extracts. The Contractor must provide all facilities for such audits, inspections and examinations, and must furnish all such information as the representatives of Canada may from time to time require with respect to such records and documentation. Nothing in this clause must be interpreted as limiting the rights and remedies which Canada may otherwise have pursuant to this Contract.
3. Canada reserves the right to apply holdbacks which may be linked to the overall milestone payment schedule in the main contract. The percentage of holdback will be determined following industry engagement

ANNEX X

Canadian Content Calculation

Annex X

1.1.1 The method of calculating Canadian Content is as follows:

Begin with the total selling price of the product or service;

Minus the applicable customs duties, excise taxes, Goods and Services Taxes (GST), Harmonized Sales Taxes (HST) and all provincial sales taxes; and,

Minus any ineligible costs, as detailed in Article 1.1.2.

The remaining value is the Canadian Content.

1.1.2 Costs or business activities that are ineligible for Canadian Content:

the value of materials, labour and services imported into Canada;

the value of any remuneration, living costs, travel expenses and relocation costs paid to non-Canadians for work on the Project;

the amount of all Excise Taxes, Import Duties, Federal and Provincial Sales Taxes, Goods and Services Taxes, Harmonized Sales Taxes and other duties;

the value of any royalties and license fees paid to a person, company or entity outside of Canada;

any proposal or bid preparations costs;

all travel costs;

the cost of government furnished equipment (equipment supplied by Canada to be used in the production process; for example, tooling, jigs, dies, production equipment).

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PART 1 - GENERAL INFORMATION

All contract awards are subject to Canada's internal approval process, which includes a requirement to approve funding in the amount of any proposed contract. Notwithstanding that a Bidder may have been recommended for contract award, issuance of any contract will be contingent upon internal approval in accordance with Canada's policies, including approval by Treasury Board in its absolute discretion. Canada makes no representation that any such approval will be sought or given. If such approval is not sought or given, no contract will be awarded. The Bidder will have no claim for damages, compensation, loss of profit, or allowance arising out of the preparation of its bid or the internal approval process conducted by Canada

1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work / System Requirement Document, Basis of Payment, Subcontractors, Bidders Questions and Canada's Responses, Insurance Requirements, Inspection / Quality Assurance / Quality Control, Evaluation Matrix, Contract Financial Security, the Federal Contractors Program for Employment Equity - Certification, , and any other annexes.

1.2 Summary

- 1.2.1 The Department of National Defence has a requirement to purchase four (4) Naval Large Tugs (NLTs) based on a 'Proven Parent' designed and built in accordance with Annex "A" System Requirements Document (SRD) and Statement of Work (SOW).
- 1.2.2 This requirement is subject to the provisions of the Canadian Free Trade Agreement (CFTA).

Canada respects all Government of Canada policies as they may apply to this requirement, including the Shipbuilding Policy Framework: "A New Policy Framework for the Canadian Shipbuilding and Industrial Marine Industry – Focusing on Opportunities 2001".
[https://www.ic.gc.ca/eic/site/sim-cnmi.nsf/vwapj/framework-cadre01_eng.pdf/\\$file/framework-cadre01_eng.pdf](https://www.ic.gc.ca/eic/site/sim-cnmi.nsf/vwapj/framework-cadre01_eng.pdf/$file/framework-cadre01_eng.pdf)

1.2.3 The Federal Contractors Program (FCP) for employment equity applies to this procurement; refer to Part 5 – Certifications and Additional Information, Part 7 - Resulting Contract Clauses and Annex "I" Federal Contractors Program for Employment Equity - Certification.

1.3 Provisional Acceptance, Acceptance and Delivery Schedule

1.3.1 Four (4) Naval Large Tugs (NLT)

The successful Bidder must deliver four (4) Naval Large Tugs (NLT). The Boats must be upright, stable, seaworthy, and afloat alongside and ready for Acceptance by Canada at the delivery points named in this RFP, having achieved Provisional Acceptance at the Contractor's shipyard prior thereto. Provisional Acceptance means, successful Provisional Acceptance at the Contractor's facility, that is, complete in all respects ready for shipping with all respective tests and trials and demonstrations and certifications successfully completed to the satisfaction of the Inspection Authority (IA), Contracting Authority (CA) and Technical Authority (TA) and in accordance with the Contract. The Contractor shall deliver for Acceptance by Canada, (Provisional Acceptance having been achieved prior thereto) as follows:

- a) Two (2) NLT's delivered to the Department of National Defence, CFB Esquimalt, Esquimalt, British Columbia requested on or before 27 months following Contract Award.
- b) Two (2) NLT's delivered to the Department of National Defence, CFB Halifax, Halifax, Nova Scotia requested on or before 45 months following Contract Award.

The vessels must be delivered with no more than 500 hours on the main engines.
The vessels shall not be towed from the shipyard to the delivery points listed above.

1.4 Communications Notification

As a courtesy, the Government of Canada requests that successful bidders notify the Contracting Authority in advance of their intention to make public an announcement related to the award of a contract.

Canada has no specific requirements for any ceremonies or events in addition to those that the Contractor may hold for their own purposes, however the Contractor should allow for one ceremony early in the Work schedule for the purposes of Canada.

The Contractor must notify Canada of any planned ceremonies or events that concern any of the Work for this contract and provide Canada with the opportunity to have up to twenty (20) guests attend each planned ceremony or event. Examples of such ceremonies or events include first steel cutting, 'keel' laying, and launching. The Contractor must inform Canada of any planned ceremony or event as early as is reasonably possible to allow Canada to coordinate attendance. If the Contractor wishes to have Senior Executives (e.g. Deputy Minister level or higher) from Canada attend any ceremony or event, then Canada must receive notice of the planned date at least 90 days in advance of the ceremony or event.

1.5 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

2.1 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-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/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](#) (2017-04-27) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days
Insert: 180 days

2.1.1 SACC Manual Clauses

B1000T (2014-06-26), Condition of Material – Bid
B3000T ((2006-06-16), Equivalent Products

2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Due to the nature of the bid solicitation, bids transmitted by facsimile to PWGSC will not be accepted.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten 10 calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders 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 the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.4 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, 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 Bidders.

2.5 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least seven days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

Canada requests that Bidders provide their bid in separately bound sections as follows:

- Section I: Technical Bid (three hard copies)
- Section II: Management Bid (three hard copies)
- Section III: Financial Bid (one hard copy)
- Section IV: Certifications (two hard copies)

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

Canada requests that Bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper where feasible and with technical drawings, use appropriately sized paper to ensure legibility;
- (b) use a numbering system that corresponds to the bid solicitation.

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, Bidders 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.

3.1.1 Section I: Technical Bid

The purpose of the Technical Bid is for the bidder to demonstrate to Canada that they have reviewed the complete Annex "A", SRD and SOW and have understood the procurement technical requirements.

In their Technical Bid, Bidders should demonstrate their understanding of the technical requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability in a thorough, concise and clear manner for carrying out the work.

The Technical Bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings.

In order to substantiate their compliance to each criterion, the Bidder shall refer to the supporting documents within their Technical Bid, with the exact page number(s) and paragraph number(s) where the required substantiation can be found. The Bidder is required to indicate where the supporting information can be found in their proposal by completing the matrices contained in Annex "G".

In order to ensure that Bidders provide all the required information, two matrices have been provided to guide the Bidder in the completion of the section. The Bidder shall complete the two matrices and include them at the end of the Section, where they will be used by the evaluation team to verify the required technical information has been provided and meets the requirements. As part of their proposal, the Bidder must also complete the Technical Compliance Matrix letter of Acknowledgement for Design and Construction of Naval Large Tugs at Annex "G", Appendix C. The elements are: The two matrices and the Compliance Matrix letter as listed below.

- a. The Technical Compliance Matrix located in Annex "G", Appendix A, Table 1; and
- b. The Technical Bid Evaluation Matrix located in Annex "G", Appendix A, Table 2.
- c. Technical Compliance Matrix letter of Acknowledgement for Design and Construction of Naval Large Tugs – Technical Bid (Section I) – Annex "G", Appendix C.

3.1.1.1 Boat Construction Experience

The Bidder shall provide objective evidence that it has a proven capability in the construction of boats of similar complexity which is the subject of this RFP, by providing an example of such a boat it has built within the last ten (10) years.

For the purpose of this evaluation, the term Similar Complexity is defined in terms of a vessel that has been constructed with all the following systems:

- a. 3 phase electrical distribution system;
- b. Black water and grey water systems; and
- c. A minimum of 400kW installed propulsion power.

If the Bidder is a joint venture, the requirement for Boat Construction Experience must be met by the member of the joint venture who will construct the "Work" as detailed in the System Requirements Document as hereto as Annex "A".

3.1.2 Section II: Management Bid

In their Management Bid, Bidders must describe their capability and experience, the project management team and provide client contact(s) in a thorough, concise and clear manner.

The Management Bid shall include details as requested in Annex "G".

In order to substantiate their compliance to each criterion, the Bidder should refer to the supporting documents within their Management Bid, with the exact page number(s) and paragraph number(s) where the required substantiation can be found. The Bidder is required to indicate where the supporting information can be found in their proposal by completing the matrices contained in Annex "G".

In order to ensure that Bidders provide all the required information, four (4) matrices have been provided to guide the Bidder in the completion of the Section. The Bidder shall complete the four matrices and include them at the end of the Section, where they will be used by the evaluation team to verify the required management information has been provided and meets the requirements. The four matrices are:

- a. The Management Bid Evaluation Matrix – Project Management Plan located in Annex "G", Appendix B, Table 3;
- b. The Management Bid Evaluation Matrix – Master Plan and Schedule located in Annex "G", Appendix B, Table 4;
- c. The Management Bid Evaluation Matrix – Quality Plan located in Annex "G", Appendix B, Table 5; and
- d. The Management Bid Evaluation Matrix – Other Requirements located in Annex "G", Appendix B, Table 6.

3.1.2.1 Subcontractors List

A list in the form of the attached Annex "C", of subcontractors for labour and / or material must be included with the Bidder's Proposal, stating the name and address of each subcontractor, and a description (Make, Model No.) of the goods or services to be supplied by each.

3.1.2.2 Contractor Quality Management System

1. The Bidder shall also provide one (1) sample of completed quality record used by the Bidder on the most recent marine Boat construction at its facility.
2. Bidder facilities may be audited by Canada, or its authorized representative, prior to award of contract to ensure that a system is in place in accordance with the foregoing requirement.

3.1.3 Section III: Financial Bid

The Financial Bid must not be attached to or combined within any other part of the bid and prices must not appear in any other area of the proposal except the Financial Bid.

3.1.3.1 Bidders must submit their **Financial bid** in accordance with Annex "B" Basis of Payment.

3.1.3.2 Bidders must submit their **Cost Breakdown** sheet in accordance with Annex "B" Basis of Payment

3.1.3.3 Bidders must submit their **Milestone Payment Schedule** in accordance with Annex "B" Basis of Payment.

3.1.3.4 Bidders must **provide a letter**, issued by and on the letterhead of an approved surety or financial institution as per article 7.34 of the Resulting Contract Clauses.

In order to substantiate their compliance to each criterion, the Bidder shall refer to the supporting documents within their Financial Bid, with the exact page number(s) and paragraph number(s) where the required substantiation can be found. The Bidder is required to indicate where the supporting information can be found in their proposal by completing the matrix contained in Annex "G".

In order to ensure that Bidders provide all the required information, one (1) matrix have been provided to guide the Bidder in the completion of the Section. The Bidder shall complete the matrix and include it at the end of the Section, where they will be used by the evaluation team to verify the required financial information has been provided and meets the requirements. The matrix is:

- a. The Financial Bid Evaluation Matrix located in Annex "G", Appendix D, Table 7.

3.1.3.5 Exchange Rate Fluctuation

C3010T (2014-11-27), Exchange Rate Fluctuation Risk Mitigation

3.1.4 Section IV: Certifications Bid

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

In order to substantiate their compliance to each criterion, the Bidder should refer to the supporting documents within their Certifications Bid, with the exact page number(s) and paragraph number(s) where the required substantiation can be found. The Bidder is required to indicate where the supporting information can be found in their proposal by completing the matrices contained in Annex "G".

In order to ensure that Bidders provide all the required information, a matrix has been provided to guide the Bidder in the completion of the Section. The Bidder shall complete the matrix and include them at the end of the Section, where they will be used by the evaluation team to verify the required certification information has been provided and meets the requirements. The matrix is:

- a. The Certifications Bid Evaluation Matrix located in Annex "G", Appendix E, Table 8.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the "technical", "management", "financial" and "certifications" evaluation criteria.

- (b) An evaluation team composed of representatives of Canada will evaluate the bids. A Fairness Monitor (FM) has been engaged to oversee the process. An FM working at arm's length from the Naval Large Tug team will be observing and reporting on the Naval Large Tug procurement process. The FM will have unrestricted access to all evaluation facilities in order to perform observations.

4.1.1 Technical Evaluation

4.1.1.1. Mandatory Technical Criteria

In order to be compliant, Bidder's proposal must meet all requirements of Annex "A" SRD and SOW and provide all information as requested in Part 3 – Bid Preparation Instructions, 3.1.1 Section I – Technical Bid.

4.1.2 Management Evaluation

4.1.2.1 Mandatory Management Criteria

In order to be compliant, Bidder's proposal must meet all requirements and provide all information as requested in Part 3 – Bid Preparation Instructions, 3.1.2 Section II – Management Bid.

4.1.3 Financial Evaluation

4.1.3.1 Mandatory Financial Criteria

SACC Manual Clause [A0220T](#) (2014-06-26), Evaluation of Price

In order to be compliant, Bidder's proposal must meet all requirements and provide all information as requested in Part 3 – Bid Preparation Instructions, 3.1.3 Section III – Financial Bid.

4.1.4 Certifications Bid Evaluation

4.1.4.1 Mandatory Certifications Criteria

In order to be compliant, Bidder's proposal must meet all requirements and provide all information as requested in Part 3 – Bid Preparation Instructions, 3.1.4 Section IV – Certifications Bid.

4.2 Basis of Selection

A bid must comply with all requirements of the bid solicitation to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

A mandatory requirement is described using the words "shall", "must", "will", "is required", "is to", "is responsible", "requires" or "is Mandatory".

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

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

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder 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 specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real procurement agreement of 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 Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed annex titled Federal Contractors Program for Employment Equity - Certification, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

5.2.3 Workers Compensation Certification – Letter of Good Standing

The Bidder must have an account in good standing with the applicable provincial or territorial Workers' Compensation Board.

The Bidder must provide, **within five (5) calendar days** following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

5.2.4 Certification of Welding

It is a requirement of this RFP that the Bidders must provide evidence of certification in for the current year for their shipyard with their bids and agree to maintain certification, until completion of the project, by the Canadian Welding Bureau (CWB) to CSA Standard W47.1: "Certification of Companies for Fusion Welding of Steel".

The Bidder hereby attaches the following applicable information with the bid:

- (a) Proof of certification to CSA Standard W47.1 for the current year; and
- (b) Proof of CWB currently approved welding procedure specifications and supporting welding data sheets to construct the boat to project welding requirements; and
- (c) Proof of employed or sub-contracted inspection personnel are currently certified to CSA Standard W47.4 and W59; and
- (d) Proof of employed welders currently certified to CSA Standard W47.1; and
- (e) Proof of employed welding supervisors currently certified to CSA Standard W47.1 and W59; or
- (f) Proof of capability to obtain as and when required personnel currently certified / approved to the standards identified in (c) and (d) and (e) above.

5.2.5 Valid Labour Agreement

Where the Bidder has a labour agreement, or other suitable instrument, in place with its unionized labour, and where such labour agreement or instrument is scheduled to expire during the period of the Contract, the Bidder represents that negotiations and good faith bargaining have commenced at least six (6) months in advance of the labour agreement expiry. The Bidder further represents and warrants that it will take all appropriate actions to ensure a continuous valid labour agreement, with all its workers, for the duration of the Contract.

The Bidder hereby provides the following documentation as part of its bid:

- a) List of all labour unions at Bidder's facilities; and
- b) List the number of labour agreements in force with these unions and provide copies of all labour agreements in force; or

- c) Statement that there are no labour unions at the bidder's facility.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirements

There is no security requirement associated with this bid solicitation.

6.2 Financial Capability

SACC Manual clause [A9033T](#) (2012-07-16) Financial Capability

6.3 Insurance Requirements

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex "E".

If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

In order to ensure that Bidders provide all the required information, one (1) matrix has been provided to guide the Bidder in the completion of their Bid. The Bidder shall complete the matrix and include it in their proposal, where it will be used by the evaluation team to verify the required Security, Financial and Other Requirements have been met. The matrix is:

- a. The Security, Financial and Other Requirements Bid Evaluation Matrix located in Annex "G", Appendix F, Table 9.

6.4 Security for Performance – Letter

6.4.1 The Bidder shall provide evidence with its Proposal that it can provide Contract Financial Security as outlined in Annex "H" Part 1. Such evidence must take the form of a letter to be obtained at the sole expense of the Bidder, issued by an approved surety or financial Institution on its letterhead to the Minister of Public Works and Government Services and signed by an authorized representative, confirming unequivocally that, upon the Contract being awarded to the Bidder, the surety or financial institution will, upon request, provide the Bidder with a form of Contract Financial Security as outlined above, and setting out, at a minimum, the amount of any such security, the cost of such security, and the time period during which it is to be extended. Failure to provide this evidence by the Bidder will result in disqualification of its Proposal. The cost to the Bidder of the Contract Financial Security is to be indicated in Annex "B" Line Item Pricing. No mark-up or other fees are permitted to be added to the cost of the Contract Financial Security.

In order to ensure that Bidders provide all the required information, one (1) matrix has been provided to guide the Bidder in the completion of their Bid. The Bidder shall complete the matrix and include it in their proposal, where it will be used by the evaluation team to verify the required Security, Financial and Other Requirements have been met. The matrix is:

- a. The Security, Financial and Other Requirements Bid Evaluation Matrix located in Annex "G", Appendix F, Table 9.

6.4.2 If this bid is accepted, the Bidder shall be required to provide Contract Financial Security within fourteen (14) calendar days of Contract Award as outlined in Annex "H" Part 1, Contract Financial Security and in accordance with Article Part 7, Article 7.34.

6.4.3 If, for any reason, Canada does not receive, within the specified period, the required Contract Financial Security described above, Canada may terminate the Contract for default pursuant to the Contract default provision.

6.4.4 Canada may, in its sole discretion, prior to or after Contract award and before the Bidder has delivered the Contract Financial Security under the Contract, waive the requirement under paragraph 6.4.2 to provide Contract Financial Security, in which event the price will be reduced by the amount of the cost to the Bidder of the Contract Financial Security as specified in Annex "B" Line Item Pricing, and the Bidder shall provide to Canada, in lieu of the Contract Financial Security and within such time frame as Canada may specify in writing, a duly executed Guarantee, in the form provided at Annex "H" Part 2, from a corporate entity whose financial covenant is acceptable to Canada, in its sole discretion. Such Guarantee must be provided at no cost to Canada. Nothing in this paragraph shall be considered a waiver of the Bidder's obligation to comply with the requirements of paragraph 6.4.1. If the Bidder wishes Canada to consider waiving the requirement to provide Contract Financial Security, the Bidder should provide evidence, with its bid, that it can provide the Guarantee described in Annex "H" Part 2 by including with its Proposal a letter signed by the proposed Guarantor agreeing to provide the Guarantee on the terms set out in Annex "H" Part 2. Within fifteen (15) working days of a request therefor by the Contracting Authority, a bidder shall also provide to the Contracting Authority any financial information related to the proposed Guarantor that the Contracting Authority may request, including, without limitation, any of the financial information described in Annex "H" Part 2 PERFORMANCE BOND (a) to (e) in respect of the proposed Guarantor.

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

7.1 Requirement

The Contractor must perform the Work in accordance with the Contract. The Work includes the construction from a proven design, the outfit, tests, trials, demonstration, certification, acceptance and delivery of four (4) Naval Large Tugs and the associated technical data, training and spares as specified herein.

The Contractor must deliver four (4) Naval Large Tugs (NLT). The vessels must be upright, stable, seaworthy, and afloat alongside and ready for Acceptance by Canada at the delivery points named below, having achieved Provisional Acceptance at the Contractor's shipyard prior thereto. Provisional Acceptance means, successful Provisional Acceptance at the Contractor's facility, that is, complete in all respects ready for shipping with all respective tests and trials and demonstrations and certifications successfully completed to the satisfaction of the Inspection Authority (IA), Contracting Authority (CA) and Technical Authority (TA) and in accordance with the Contract. The Contractor shall deliver for Acceptance by Canada, (Provisional Acceptance having been achieved prior thereto) as follows:

-
- a) Two (2) NLT's delivered to the Department of National Defence, CFB Esquimalt, Esquimalt, British Columbia requested on or before 27 months following Contract Award.
 - b) Two (2) NLT's delivered to the Department of National Defence, CFB Halifax, Halifax, Nova Scotia requested on or before 45 months following Contract Award.

The vessels must be delivered with no more than 500 hours on the main engines.
The vessels shall not be towed from the shipyard to the delivery points listed above.

7.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract 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 Works and Government Services Canada.

7.2.1 General Conditions

[2030](#) (2016-04-04), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

7.2.2 Supplemental General Conditions

7.2.2.1 [1028](#) (2010-08-16), Ship Construction – Firm Price, apply to and form part of the Contract.

The Supplemental General Conditions 1028, Article 12 – Warranty, paragraph 3 is deleted and replaced with the following:

The warranty period for each Vessel is twelve (12) months from the date of its delivery to and acceptance by Canada. However, the warranty period for each hull is two (2) years from the date of the Vessel's delivery to and acceptance by Canada. For each of the vessels, the entire mechanical and electrical components of the power train, power train resilient mountings and any sub-bases incorporated into the propulsion engine or gearing arrangements shall have a 2-year warranty which commences from acceptance of the vessel by Canada.

7.2.2.2 [4006](#) (2010-08-16), Contractor to Own Intellectual Property Rights in Foreground Information.

7.2.3 Contract Cost Principles

[1031-2](#) (2012-07-16) Contract Cost Principles, apply to and form part of the Contract.

7.3 Security Requirements

There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Period of the Contract

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File No. - N° du dossier
017mc.W8472-185713

Buyer ID - Id de l'acheteur
017mc
CCC No./N° CCC - FMS No./N° VME

The period of the Contract is from Award date to two (2) years after delivery and acceptance of the last vessel/tug.

7.4.2 Delivery Date

All the deliverables for the first two vessels including the vessels, TDP, spares and training must be received at the final destination on or before 27 months following contract award.

All the deliverables for the third and fourth vessels including the vessels, TDP, spares and training must be received on or before 45 months following contract award.

7.4.5 Delivery Points

Delivery of the requirement will be made to delivery point(s) specified at article 7.1 of the Contract.

7.5 Authorities

7.5.1 Contracting Authority

Name: Brenda Lamothe
Title: Supply Team Leader
Public Services and Procurement Canada,
Marine Services & Small Vessels Sector,
Small Vessel Construction Division
Address: 6C2, Place du Portage, Phase III
11 Laurier Street
Gatineau, QC. K1A 0S5 CANADA
Telephone: 819-420-2916
E-mail: brenda.lamothe@tpsgc-pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

7.5.2 Technical Authority *(information will be provided at contract award)*

The Technical Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____ - ____ - ____
E-mail address: _____

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the

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017mc
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Work under the Contract. Technical matters may be discussed with the Technical Authority; however, the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.5.3 Inspection Authority (*information will be provided at contract award*)

The Inspection Authority for the Contract is:

Name:
Title:
Address:

Telephone:
E-mail address:

The Inspection Authority is the representative of the department or agency for whom the Work is being performed under the Contract and is responsible for inspection of the Work and acceptance of the finished work. The Inspection Authority may be represented on-site by a designated inspector and any other Government of Canada inspector who may from time to time be assigned in support of the designated Inspector.

7.5.4 Contractor's Representative

Name:
Title:
Telephone:
E-mail address:

7.5.5 Delegation

Each of the Authorities referred to above may from time to time delegate its responsibilities in whole or in part under this Contract and may act through its authorized representative. To be effective, such delegation shall be in writing specifying the nature and extent of the authority given, the name of the representative, with a copy delivered to the Contractor by the Contracting Authority, it being understood that a person to whom responsibilities have been delegated cannot further delegate such responsibilities.

7.5.6 Contractor Project Manager / Representative

The Contractor shall, by written notice to the Contracting Authority, designate the person or persons who may act on behalf of and with the authority of the Contractor under this Contract. The Contractor's designated person or persons shall have the right to delegate their authority and to act through their duly appointed representative. To be effective, such delegation shall be in writing specifying the nature and extent of the authority given, the name of the representative, with a copy delivered to Canada through the Contracting Authority, it being understood that a person to whom responsibilities have been delegated cannot further delegate such responsibilities.

7.6 Payment

7.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid *firm unit prices, as specified in Annex "B" for a cost of \$ _____ (Canadian Dollars Only)(to be inserted at contract award)*. Customs duties are included and Applicable Taxes are extra.

7.6.1.1 Milestone Payments

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract at Annex "B" and the payment provisions of the Contract if:

- a. an accurate and complete claim for payment using [PWGSC-TPSGC 1111](#), Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all the certificates appearing on form [PWGSC-TPSGC 1111](#) have been signed by the respective authorized representatives;
- c. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

7.6.2 Limitation of Price

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

7.6.3 Payment for Fuels, Oils and Lubricants

The Contractor must supply all fuel, lubricating oil, hydraulic oil and other lubricants sufficient for fully charging all systems as required for operating the machinery and other equipment and for performing all tests and trials at the cost of the contractor.

7.6.4 Field Engineering and Supervisory Services

If Field Service Representatives (FSR) and/or Supervisory Services are required for the Work, the cost of all such services must be included in the price for the Work.

7.7 Invoicing Instructions

1. The Contractor must submit a claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment.
2. Each claim must show:
 - a. all information required on form [PWGSC-TPSGC 1111](#);
 - b. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions; and
 - c. the description and value of the milestone claimed as detailed in the Contract.
3. Applicable Taxes must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.

4. The Contractor must prepare and certify one original and two (2) copies of the claim on form [PWGSC-TPSGC 1111](#), and forward it to Canada, identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.
Canada will then forward the original and two (2) copies of the claim certification and onward submission to the Payment Office for the remaining certification and payment action.
5. The Contractor must not submit claims until all work identified in the claim is completed.

7.8 Certifications and Additional Information

7.8.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

7.8.2 Welding Certification

1. The Contractor must ensure that welding is performed by a welder certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of the following Canadian Standards Association (CSA) standards:

- (a) CSA W47.1, Certification of Companies for Fusion Welding of Steel.

7.8.3 Workers Compensation

The Contractor must maintain its account in good standing with the applicable provincial or territorial Workers' Compensation Board for the duration of the Contract.

7.8.4 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "[FCP Limited Eligibility to Bid](#)" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

7.9 Project Schedule

1. The Contractor must provide a detailed project schedule in accordance with Annex "A" SRD and SOW, CDRL-M-002, DID-M-002 Master Plan and Schedule.
2. The schedule is to be regularly updated and available in the Contractor's office for review by Canada's authorities to determine the progress of the Work.

7.10 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

7.11 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 Agreement;
- (b) the supplemental general conditions 1028 (2010-08-16), Ship Construction – Firm Price;
- (c) the supplemental general conditions 4006 (2010-08-16), Contractor to own Intellectual Property Rights in Foreground Information;
- (d) the general conditions 2030 (2016-04-04), General Conditions - Higher Complexity - Goods;
- (e) the 1031-2 (2012-07-16), Contract Cost Principles;
- (f) Annex "A", Statement of Work / Systems Requirement Document;
- (g) Annex "B", Basis of Payment;
- (h) Annex "C", Subcontractors;
- (i) Annex "D", Bidders Questions and Canada's Responses;
- (j) Annex "E", Insurance Requirement;
- (k) Annex "F", Inspection / Quality Assurance / Quality Control;
- (l) Annex "H", Contract Financial Security
- (m) the Contractor's bid dated 'TBD' .

7.12 Defence Contract

SACC *Manual* clause [A9006C](#) (2012-07-16) Defence Contract

7.13 Trade Qualifications

The Contractor must use qualified, certified (where applicable) and competent tradespeople and supervision to ensure a uniform high level of workmanship. The Contracting Authority may request to view and record details of the certification and/or qualifications held by the Contractor's tradespeople. This request should not be unduly exercised but only to ensure qualified tradespeople are on the job.

7.14 Quality Management Systems

1. The Contractor must have in place during the performance of the work, a Quality Assurance Program developed in accordance with Annex "A" SRD and SOW, CDRL-M-003, DID-M-003 Quality Management Plan and approved by Canada during the performance of the Work in accordance with DID-M-003.
2. The Contractor's facilities may be audited by Canada, or its authorized representative, during the performance of the Work to ensure that the approved quality system is in place and in accordance with the foregoing requirement.
3. The Contractor will be required to submit completed quality assurance documentation with each claim for payment as applicable.

7.15 Contract Kick-off Meeting

Within **five (5) working days** of the receipt of the contract, the Contractor must contact the Contracting Authority to confirm the scheduling of the Contract Kick-off meeting. The meeting shall be in accordance with the Annex "A" SRD and SOW, CDRL-M-007, DID-M-007 Kick-off Meeting. The meeting will be held at the Contractor's facility. Cost of holding the meeting must be included in the price of the bid. Please

note that the travel and living expenses for Government Personnel will be arranged and paid for by Canada.

7.16 Technical Data Package and Technical Data Management Plan

1. The Contractor must develop and deliver to the Technical Authority for acceptance a Technical Data Management Plan in accordance with Annex "A" SRD and SOW, CDRL M-005, DID-M-005. The contractor must develop and deliver to the Technical Authority for acceptance a Technical Data Package in accordance with Annex "A" SRD and SOW, CDRL ILS-003, DID-ILS-003. All drawings, reports, Data Books, Operating Instruction Books, Maintenance Manuals and Spare Parts Lists (including part numbers and ordering instructions) for all machinery and equipment fitted on the vessel(s) as required in Annex "A", SRD and SOW must be submitted to Canada for review and acceptance. Once approved by the TA, the Contractor will provide copies in accordance with and as specified in Annex "A", SRD and SOW.

2. Where manuals are examined by Canada, such examination does not relieve the Contractor of any responsibility under the Contract for ensuring the correctness of all details and adequacy of performance of the vessel(s), nor does it obligate Canada to accept, in part or in whole, an item of work completed in accordance with such manual, nor does it mean such an item of work meets the requirements of Annex "A", SRD and SOW.

7.17 Insurance Requirements

1. The Contractor must comply with the insurance requirements specified in **Annex "E"**. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

2. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

3. The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. Coverage must be placed with an Insurer licensed to carry out business in Canada. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

7.18 SACC Manual Clauses

A9047C – Title to Property – Vessel, 2008-05-12
B4075C - Welding Certification – Contract, 2016-01-28
B9035C - Progress Meetings, 2008-05-12
B5007C - Procedures for Design Change or Additional Work, 2010-01-11
D3015C - Dangerous Goods/Hazardous Products – Labelling and Packaging Compliance, 2014-09-25
D0018C - Delivery and Unloading, 2007-11-30
C0711C - Time Verification, 2008-05-12
H4500C - Lien - Section 427 of the Bank Act, 2010-01-11
C2801C 2014-11-27, Priority Rating - Canadian-based Contractors
D2000C 2007-11-30, Marking
D2001C 2007-11-30, Labelling
D5540C – ISO 9001:2008 Quality Management Systems – Requirements (Quality Assurance Code Q) – 2010-08-16
D5510C – Quality Assurance Authority (Department of National Defence) – Canadian-based Contractor – 2014-06-26

D5606C – Release Documents (Department of National Defence) – Canadian – based Contractor, 2012-07-16

7.19 Release Documents – Distribution

The Contractor must prepare the release documents in a current electronic format and distribute them as follows:

- a. One (1) copy mailed to consignee marked: "Attention: Receipts Officer";
- b. Two (2) copies with shipment (in a waterproof envelope) to the consignee;
- c. One (1) copy to the Contracting Authority;
- d. One (1) copy to:

*National Defence Headquarters
Mgen George R. Pearkes Building
101 Colonel By Drive
Ottawa, ON K1A 0K2
Attention: _____*

- e. One (1) copy to the Quality Assurance Representative;
- f. One (1) copy to the Contractor; and
- g. For all non-Canadian contractors, one (1) copy to:

*DQA/Contract Administration
National Defence Headquarters
Mgen George R. Pearkes Building
101 Colonel By Drive
Ottawa, ON K1A 0K2*

E-mail: ContractAdmin.DQA@forces.gc.ca.

7.20 Provisional Acceptance, Acceptance and Delivery Schedule

7.20.1 Naval Large Tugs

The Contractor must deliver the Naval Large Tugs (NLT). The Boats must be upright, stable, seaworthy, and afloat alongside and ready for Acceptance by Canada at the delivery points named in this Contract, having achieved Provisional Acceptance at the Contractor's shipyard prior thereto.

7.20.2 Provisional Acceptance

Provisional Acceptance means, successful Provisional Acceptance at the Contractor's facility, that is, complete in all respects ready for shipping with all respective tests and trials and demonstrations and certifications successfully completed to the satisfaction of the Inspection Authority (IA), Contracting Authority (CA) and Technical Authority (TA) and in accordance with the Contract.

Upon completion of all tests and trials specified in Annex "A", the Contractor shall submit a certificate of Provisional Acceptance in a format specified by Canada, to be signed by the authorized representative of the Contractor, the Inspection Authority and the Contracting Authority. In addition, the Inspection Authority will prepare a final list of all outstanding Work items (including non-conformance reports) for review at the Provisional Acceptance Conference and attached to the Provisional Acceptance certificate as an

appendix. The list of outstanding Work shall be reviewed to determine if the Vessel is fully operational for their intended service to the satisfaction of Canada. Upon receipt of a signed copy of the Provisional Acceptance certificate by the Contracting Authority, the Contractor shall proceed with delivery of the boat to the specified location for Acceptance by Canada.

After successful Provisional Acceptance at the Contractor's shipyard, the Contractor shall deliver for Acceptance by Canada:

- a) Two (2) NLT's delivered to the Department of National Defence, CFB Esquimalt, Esquimalt, British Columbia, requested on or before 27 months following Contract Award.
- b) Two (2) NLT's delivered to the Department of National Defence, CFB Halifax, Halifax, Nova Scotia requested on or before 45 months following Contract Award.

The vessels must be delivered with no more than 500 hours on the main engines.
The vessels shall not be towed from the shipyard to the delivery points listed above.

7.20.3 Each outstanding Work item on the Acceptance list referred above shall have a price determined in accordance with the following: the higher of twice the cost for the outstanding Work to be completed by the Contractor, or twice the cost for the outstanding Work to be completed as quoted by a third party, and that amount shall be deducted from any payment otherwise due.

7.20.4 It is understood and agreed that where the Work has been substantially completed and the parties have agreed upon the terms and conditions for the Contractor to make good all deficiencies, the certificate may be executed with a statement attached concerning the making good of the deficiencies.

7.20.5 Acceptance of the vessels by the Minister shall occur with a written execution of a certificate in accordance with form PWGSC-TPSGC 1105, with evidence satisfactory to Canada that the Vessels has successfully completed all Tests and Trials and Demonstrations and Certification. The execution of the Certificate shall in no way relieve the Contractor of its obligations under the Contract.

7.21 Work Site Access

Authorized representatives of Canada must have access to any site where any part of the Work is being carried out at any time during working hours to make examinations and such tests of the Work as they may deem fit.

7.22 Material Schedule Submission

7.22.1 The Contractor must submit to Canada, a Material Schedule in accordance with Annex "A" SRD and SOW, CDRL-M-002, DID-M-002 Master Plan and Schedule.

7.22.2 The Contractor must provide Canada with a copy of its purchase orders. Up to ten (10) working days is required by Canada for examination of purchase orders. Canada shall advise the Contractor of its decision in respect to each one of the purchase orders.

7.23 Drawings and Purchase Orders during Construction Phase

7.23.1 All drawings and purchase orders shall be submitted to Canada for review and comment.

7.23.2 Any examination of any Contractor's drawings or purchase orders by or on behalf of Canada shall not relieve the Contractor of any responsibility under this Contract and shall not relieve any Subcontractor of any responsibility under any subcontract. In particular, examination or approval of drawings or purchase orders shall not:

- (a) Relieve the Contractor of its obligation to ensure that all details are correct;
- (b) Obligate Canada to accept an item that does not meet the Contract requirements;
- (c) Confirm that an item complies with the Contract requirements; and
- (d) Relieve the Contractor of the responsibility for any omissions and the consequences resulting therefrom.

7.24 Additional Work Including Design Change

7.24.1 The Contractor hereby acknowledges that Canada may require the Contractor to perform additional Work at any time and from time to time, during this Contract over and above the Work identified at Annex "A". The additional Work could include but not be limited to:

- (a) Additions or variations to the Work including Design Changes; and
- (b) Dispensing with or change to any portion of the Work.

7.24.2 If any additional Work is required, the procedure for processing the "Additional Work" shall be as set out in clause B5007C, All negotiations must be completed and the additional Work authorized on form PWGSC - TPSGC 1686 prior to the commencement of the Work, unless and until the Contracting Authority specifically authorizes commencement of the additional Work, in writing, prior to completion of negotiations and completion of form PWGSC - TPSGC 1686.

7.24.3 The Contractor shall perform the additional Work under the same terms and conditions of the Contract. The additional Work will be negotiated using the labor rates and markups contained in the Contract.

7.24.4 The Contractor may request a change to the Work for Canada's consideration by submission of a request for change proposal to the Contracting Authority.

7.24.5 Extensions in the delivery date as a result of the approved additional (unscheduled) Work must be presented at the time of the proposal and to the satisfaction of the Contracting Authority, otherwise extensions to the delivery date will not be considered.

7.24.6 No cost additional Work: Notwithstanding the foregoing, should Canada deem it advisable to make any reasonable change in the Work during the course of the Work, provided the change is ordered before that particular part of the Work to which Canada refers is commenced and involves no extra cost to the Contractor, such changes shall be made by the Contractor without extra cost to Canada.

7.24.7 Incorporation of Additional Work or Design Changes: Where additional Work including Design Changes has been agreed to by the Parties, the resulting change shall be incorporated into the Work, and:

- (a) Be subject to all of the provisions of the Contract;
- (b) Not relieve the Contractor of its obligation to ensure that the Vessel meets all of the performance requirements set out in the Systems Requirements Document and shall not affect the delivery date unless otherwise provided for in form PWGSC - TPSGC 1686 relating to such additional work or design change.

7.25 Inspection

7.25.1 All reports, deliverables, documents, goods and all services rendered under this Contract shall be subject to inspection by the Inspection Authority. Should any report, document, good or service not be in accordance with the requirements of the Contract, the Inspection Authority shall have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment. Any communication with a Contractor regarding the quality of Work performed pursuant to this Contract shall be undertaken by official correspondence through the Contracting Authority.

7.25.2 The Contractor shall be responsible for properly setting up, preparing, providing access to and presenting Work for inspection and for giving adequate notice to the Inspection Authority and the Regulatory Body that the Work is complete, and having been pre-tested or inspected by the Contractor, is ready for formal inspection.

7.25.3 Inspection will be done by the Inspection Authority at the most appropriate location:

(a) For the Vessels, at Contractor's facilities during the construction of the Boat, up to and including Provisional Acceptance of the Boat; and at Canada's facilities for Acceptance; and

(b) For most of the Documentation, at Canada's facilities.

7.25.4 Inspection requirements shall be in accordance with the provisions of this Contract including 2030 General Conditions - Higher Complexity - Goods (2015-09-03) and 1028 Ship Construction - Firm Price (2010-08-16) and the following procedures:

(a) Design Drawings

(i) Construction drawings and calculations: Upon receipt of each drawing and the associated technical data by the Inspection Authority and Technical Authority they will be reviewed for their content against the provisions of the Contract. Canada will notify the Contractor in writing of any discrepancies or concerns within ten (10) working days of the receipt of the document.

(ii) Upon receipt of each construction drawing and purchase order by the Inspection Authority and Technical Authority, they will be reviewed against the Contract. Canada will notify the Contractor in writing of any discrepancies or concerns within ten (10) working days of the receipt of the document.

(b) Inspection during the Construction Phase as carried out by the Inspection Authority will consist of the audit of the Contractor's Quality Control System and records, a series of inspections and the witnessing of tests, trials and demonstrations deemed necessary by the Inspection Authority to verify that the Work has been performed in compliance with the provisions of Annex "A", SRD and SOW.

(c) Non-conformance Report (NCR): A NCR will be issued for each Non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the Non-conformance.

(d) When the Non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the NCR by adding an appropriate signed and dated notation.

(e) When Acceptance Sea Trials have been successfully completed and the Contractor has corrected and addressed items on the Non-conformance list, an Acceptance Inspection of the boat shall be carried out by the Inspection Authority. Three (3) working days prior to the scheduled Acceptance Date, the content of all Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Delivery Document prior to the Inspection Authority certification of such document. A

final Deficiencies Database shall be prepared for signature if necessary. Acceptance Certificate of Ship into the Department of National Defence shall be prepared for signature.

(f) The Contractor shall correct all outstanding deficiencies during the warranty period at a time and place agreed to by the Contractor and the Technical Authority and the Contract Authority.

(g) Notwithstanding the above and the inspection by the Inspection Authority, the discrepancy notices, the Non-conformance reports, or absences thereof, or corrections thereto, or acceptance thereof, do not relieve the Contractor of its obligations to satisfy the requirements of this Contract. As such, the Contractor shall correct any and all defects or deficiencies discovered at no additional cost to Canada.

7.26 Tests and Trials

7.26.1 Launching of the Vessels

The Contractor shall be responsible for the safe and satisfactory launching of the Vessels at a time and in a manner agreed upon between the Contractor and Canada. If at any time prior to Acceptance of the Vessel there is reason to believe the underwater portion of the Vessel has been seriously impaired, the Contractor shall place the Vessel in dry-dock and adequately inspect, repair, clean, and paint the damaged areas at its own expense and to the satisfaction of Canada. On completion of the Work, the Contractor shall be responsible for the safe and satisfactory returning the Vessel afloat, alongside and upright at the Contractor's facility.

7.26.2 Tests, Trials and Demonstrations

(a) All tests, trials and demonstrations must be performed in accordance with Annex "A" SRD and SOW and Annex "F" Inspection/Quality Assurance/Quality Control.

(b) The Contractor shall in all respects be responsible for the conduct of all Tests and Trials and Demonstrations in accordance with the requirements of this Contract.

(c) The Contractor must keep written records of all tests, trials, and demonstrations conducted as required by the QA System.

(d) Canada reserves the right to defer starting or, continuing with any Sea Trials for any reasonable cause including but not limited to adverse weather visibility, equipment failure or degradation, lack of qualified personnel and inadequate safety standards.

(e) The Contractor shall dry-dock the Vessel on successful completion of Acceptance Trials for underwater inspection and final approval by the Inspection Authority and Technical Authority prior to acceptance of each boat. On completion of the Work, the Contractor shall be responsible for the safe and satisfactory returning the boat to afloat, alongside and upright at the Contractor's facility.

7.27 Certificates

7.27.1 The Contractor shall obtain and deliver to Canada in the name of the Owner all the usual and all the relevant certificates for the proper and safe operation of the Boat in accordance with Annex "A", SRD and SOW.

7.27.2 All costs associated with obtaining certificates referred to in sub-clause 7.27.1 above are included in the "Contract Price".

7.28 Government Supplied Material

7.28.1 Government Supplied Material (GSM) - TBD

7.29 Failure to Deliver

Time is off the essence of this Contract. Failure to deliver by the date(s) specified in the Contract will prejudice Canada.

Delivery is an essential part of this contract. Except for excusable delays notified in accordance with Section 11 of 2030 General Conditions - Higher Complexity - Goods, failure to deliver by the date(s) specified in this Contract will prejudice the Government of Canada and will, at the Government of Canada's discretion, entail either:

- a. Contract Termination in accordance with 2030 General Conditions Sections 10 (Time of the Essence) and 31 (Default by the Contractor); or
- b. Consideration for Contract Amendment. Delivery date(s) will not be extended without consideration being provided by the Contractor in the form of adjustment to the price, warranty, quantity and / or service to be provided.

7.30 Total System Responsibility

The Contractor shall have Total System Responsibility (TSR) for the work performed by and on behalf of the Contractor under the Contract. TSR includes but is not limited to:

- (a) system design and total system integration which includes the task of aggregating, interconnecting, setting-to-work, testing, trials and making compatible all the Systems and Deliverables, including their associated software, so as to fulfill the performance and other requirements described in Annex "A", System Requirements Documents; and
- (b) placement and management of sub-contractors; and
- (c) ensuring that documentation and publications are sufficient to permit operation and maintenance of the systems and the equipment which they depict; and
- (d) all other work required to ensure the Vessels are fully functional and meets the requirements of the Contract.

7.31 Welding Personnel

Prior to the commencement of the Work, the Contractor must provide to the Inspection Authority a list of welding personnel intended to be used in the boat construction. The list is to identify the Canadian Standard Association (CSA), or equivalent welding qualifications attained by each of the personnel listed and is to be accompanied by each person's current CSA, or equivalent welding ticket.

7.32 Maintenance and Operator's Manual

The Contractor shall supply maintenance and operator's manual, with the Vessels in accordance with the requirements of Annex "A" SRD and SOW. The Price of all operator's manuals shall be included with the Contract Price.

7.33 Preliminary Design Review and Critical Design Review

- 7.33.1 The Contractor shall conduct a Preliminary Design Review (PDR) and Critical Design Review (CDR) in accordance with Annex "A" SRD and SOW to ensure that the Vessels upon completion of the Work will meet fully the performance and other requirements and that the space established in the design is sufficient for all equipment, stores, crew, liquids, etc.
- 7.33.2 Upon completion of the PDR and CDR, the Contractor shall:
- (a) Provide the Contracting Authority with a written statement in which the Contractor shall provide its acceptance and guarantee that the design is sufficient to allow the Vessel when completed to perform fully in accordance with the Contract including Annex "A" SRD and SOW; or
 - (b) advise the Contracting Authority in writing that the design is defective or deficient and the reasons therefor.
- 7.33.3 No later than ten (10) working days after having received any statements mentioned in sub-article 7.33.2 (a) or (b), Canada shall notify the Contractor of the acceptance of the statements.
- 7.33.4 Upon provision of the statement at 7.33.2 (a), the Contractor shall be liable for all additional costs which may be required to complete the Work.
- 7.33.5 In accordance with the Contractor's Proposal dated _____, the Naval Large Tugs are to be built from a proven design. Where the Contractor alleges and Canada agrees that the design is defective or deficient, the parties to the Contract shall endeavor to negotiate an agreement for a correction to the design.
- 7.33.6 Where the Contractor alleges the design is defective or deficient, and Canada does not agree or if within forty (40) calendar days of Contract award no agreement on the correction to the design, Canada may by written notice to the Contractor terminate the Contract. Upon such termination Canada shall be liable to the Contractor only for its costs of conducting the PDR and CDR. Such costs shall be determined in accordance with PWGSC - TPSGC Contract Cost Principles 1031-2 up to the maximum amount of the associated milestone.
- 7.33.7 Where the parties to the Contract can reach agreement on correcting the design, changes to the Naval Large Tugs, and to all other contracted items affected, and all cost thereof, the Contractor shall be responsible for completing the Work in accordance with the Contract.
- 7.33.8 After reaching agreement as referred to in sub-clause 7.33.6 above, the Contractor shall provide a written statement as described in sub-clause 7.33.1 (a) above.
- 7.33.9 The Contractor shall not incur Material and Labour Costs until a written statement, as set out in sub-clause 7.33.2 (a) above, has been provided and this statement has been accepted as valid by the Contracting Authority.

7.34 Contract Financial Security

- 7.34.1 The Contractor must provide Contract Financial Security as required by Annex "H", Part 1 within fourteen (14) calendar days of Contract Award. If Canada does not receive the required Contract

Financial Security within that time, Canada may terminate the Contract for default pursuant to the Contract default provisions.

7.34.2 Canada may, in its sole discretion, prior to or after Contract award and before the Contractor has delivered the Contract Financial Security under the Contract, waive the requirement under Article 7.40.1 to provide Contract Financial Security, in which event the Contract Price will be reduced by the amount of the cost to the Contractor of the Contract Financial Security as specified in Annex "B" Line Item Pricing, and the Contractor shall provide to Canada, in lieu of the Contract Financial Security and within such time frame as Canada may specify in writing, a duly executed Guarantee, in the form provided at Annex "H" Part 2, from a corporate entity whose financial covenant is acceptable to Canada, in its sole discretion. Such Guarantee must be provided at no cost to Canada.

7.35 Canada Shipping Act, 2001

The Contractor shall co-operate with Canada in the recording and registration procedures set out in Part I of the *Canada Shipping Act, 2001*. All certificates and necessary exemptions for a boat of this class shall be provided.

7.36 Boat – Access by Canada

Canada reserves the right to carry out limited Work by its personnel on equipment on board the Vessel. Such Work will be carried out at times mutually acceptable to Canada and to the Contractor.

7.37 Limitation of Liability

1. This section applies despite any other provision of the Contract and replaces the section of the general conditions entitled "Liability". Any reference in this section to damages caused by the Contractor also includes damages caused by its employees, as well as its subcontractors, agents, and representatives, and any of their employees.

2. Whether the claim is based in contract, tort, or another cause of action, the Contractor's liability for all damages suffered by Canada caused by the Contractor's performance of or failure to perform the Contract is limited to \$10 million per incident or occurrence to an annual aggregate of \$20 million for losses or damage caused in any one year of carrying out the Contract, each year starting on the date of coming into force of the Contract or its anniversary. This limitation of the Contractor's liability does not apply to nor include:

- (a) Any infringement of intellectual property rights;
- (b) Any breach of warranty obligations;
- (c) Any liability of Canada to a third party arising from any act or omission of the Contractor in performing the Contract; or
- (d) Any loss for which the policies of insurance specified in the Contract or any other policies of insurance held by the Contractor would provide insurance coverage.

3. Each Party agrees that it is fully liable for any damages that it causes to any third party in connection with the Contract, regardless of whether the third party makes its claim against Canada or the Contractor.

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W8472-185713

Amd. No. - N° de la modif.
File No. - N° du dossier
017mc.W8472-185713

Buyer ID - Id de l'acheteur
017mc
CCC No./N° CCC - FMS No./N° VME

If Canada is required, as a result of joint and several liability, to pay a third party in respect of damages caused by the Contractor, the Contractor must reimburse Canada for that amount.

4. The Parties agree that nothing herein is intended to limit any insurable interest of the Contractor nor to limit the amounts otherwise recoverable under any insurance policy. The Parties agree that to the extent that the insurance coverage required to be maintained by the Contractor under this Contract or any additional insurance coverage maintained by the Contractor, whichever is greater, is more than the limitations of liability described in sub article (2), the limitations provided herein are increased accordingly and the Contractor shall be liable for the higher amount to the full extent of the insurance proceeds recovered.

5. If, at any time, the total cumulative liability of the Contractor for losses or damage suffered by Canada caused by the Contractor's performance of or failure to perform the Contract, excluding liability described under subsection 2(a), (b), (c) and (d) exceeds \$40 million, either Party may terminate the Contract by giving notice in writing to the other Party and neither Party will make any claim against the other for damages, costs, expected profits or any other such loss arising out of the termination. However, no such termination or expiry of the Contract shall reduce or terminate any of the liabilities that have accrued to the effective date of the termination but which liabilities are subject to the limitations as specified in sub-article (1) through (4) above.

6. The date of termination pursuant to this Article, shall be the date specified by Canada in its notice to terminate, or, if the Contractor exercises the right to terminate, in a notice to the Contractor from Canada in response to the Contractor's notice to terminate. The date of termination shall be in Canada's discretion to a maximum of 12 months after service of the original notice to terminate served by either Party pursuant to sub-article 5, above.

7. Nothing shall limit Canada's other remedies, including Canada's right to terminate the Contract for default for breach by the Contractor of any of its obligations under this Contract, notwithstanding that the Contractor may have rea

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ANNEX "A"

STATEMENT OF WORK / SYSTEM REQUIREMENT DOCUMENT

See attached as a separate document

DRAFT

ANNEX "B"

BASIS OF PAYMENT

Price Evaluation

All firm prices and hourly rates must be in Canadian dollars, Canadian customs duty and excise tax included, Incoterms 2000 Delivered Duty Paid (DDP) to the delivery points identified, GST and HST extra, as applicable.

Price Table 1

		Column A	Column B	Column C (=A X B)
Item #	Description	Unit Price CDN\$	Quantity	Total per Item CDN\$
1	Naval Large Tug	\$	4	\$
2	Transportation Cost per Tug to CFB Esquimalt	\$	2	\$
3	Transportation Cost per Tug to CFB Halifax	\$	2	\$
4	Technical Data Package for all vessels	\$	4	\$
Subtotal A	Total Proposed Contract Price (sum column A item #1-#4) and (sum column C item #1-#4)	\$	4	\$
5	Cost of Contract Financial Security	\$	1	\$
Subtotal B	Total Proposed Contract Price (sum column A subtotal A + item #5) and (sum column C subtotal A + item #5)	\$	4	\$
The indicated number # of hours for article 6, 7, 8, 9 and 10 are for evaluation purposes only. The Hourly Rate is a firm rate for the duration of the contract.				
Item #	Description	Hourly Rate CDN\$	Quantity hrs	Total per Item CDN\$
6	Engineering Services	\$	100	\$
7	Foreperson	\$	100	\$
8	General Labour	\$	100	\$
9	Supervision	\$	100	\$
10	Administrator	\$	100	\$
Total Evaluated Price (Sum of subtotal B plus items #6-#10)				\$

1. Charge-out Rate / Material Mark-up

The following rates are included in the Basis of Payment and must remain valid for the duration of the contract:

The Charge-out Rates specified below include; Engineering services, Foreperson, General Labour, Supervision, Administrator and must be inclusive of all overheads and profit. The Charge-out Rates will be used for pricing unscheduled work that results in an increase or decrease during the Work Period, except as noted in the clause entitled "Overtime."

Description	Hourly Rate CDN\$ (A)
Engineering Services	\$
Foreperson	\$
General Labour	\$
Supervision	\$
Administrator	\$

The cost of material must be the net laid-down cost of the material to which must be added a mark-up of 10% of the net laid-down cost of the material. For the purposes of pricing, Unscheduled Work and material must be deemed to include subcontracts.

2. Overtime:

In the event Canada authorizes overtime for Unscheduled Work, the applicable overtime rates as defined below shall be applied to the hourly rates found in 1. Charge-out Rate / Material Mark-up , GST/HST extra, as applicable.

Overtime is defined as:

Regular time is defined as an 8 hour work day or in accordance with current employment contract;
Overtime Time and One-Half Rate (1.5x the hourly rate (A) found in section 1 above is defined as time in excess of the regular time; and
Overtime Double Time Rate (2.0 x the hourly rate (A) found in section 1 above if applicable under current employment contract.

3. Labor Rates for Additional Work including Design Change

For the performance of the Work as a result of approved additional Work including Design, or Engineering Change, Foreperson, General Labour, Supervision, Administrator or change in the scope of Work, the Contractor shall be paid the firm hourly charge-out rate as detailed in 1. Charge-out Rate / Material Mark-up, GST/HST extra, as applicable.

The firm hourly charge-out labour rates will remain firm for the term of the Contract and any subsequent amendments.

4. Material for Additional Work including Design Change

For the performance of the Work to procure additional Material as a result of approved additional Work including Design Change or change in the scope of Work, the Contractor shall be paid the Direct Material Cost as defined in Contract Cost Principles 1031-2 plus a firm mark-up of 10% GST/HST extra, as applicable. Other than the 10% mark-up, no additional charges relating to material procurement, insurance, handling, store keeping and activities of this nature, or any other charge whatsoever, will be accepted as part of the additional Work prices.

The material mark-up rate will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Charge-out Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

The material mark-up rate will remain firm for the term of the Contract and any subsequent amendments.

5. Payment for Additional Work including Design Change

The Contractor may claim payment for Additional Work including Design Change where the Work involved in the additional Work or Design Change has been initiated, fully in accordance with the provisions of the Contract. Each additional Work package or Design Change is to be divided over the entire Contract period proportionately to each payment set out in the Contract. Payment for Additional Work or Design Change shall be subject to the same conditions herein.

MILESTONE PAYMENT SCHEDULE

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

The percentage payments in Milestone No. 1 and 2 are based on the Contract Total Per Item (Subtotal A Column C) from Price Table 1. Milestone No. 3 is the cost for Financial Security total only as submitted in Price Table 1 (Column C #5). All other Milestones 4.1 to 15.4 are to be applied to (subtotal A Column 'A') of Price Table 1. *(example...The acceptance of Milestones 5.1 to 5.4. will result in a payment equal to 7% of the price at subtotal A from Column 'A' of Price Table 1)*

Contract Total: \$_____

Milestone No.	Description or deliverable(s)	%	Firm Unit Price (Applicable Taxes Extra)	Total Firm Price (Applicable Taxes Extra)
1	Preliminary Design Review completed and accepted by Canada	3%		
2	Critical Design Review completed and accepted by Canada	3%		

3	Cost of Financial Security-reviewed and accepted by Canada			
4.1 to 4.4	Delivery of material to shipyard – 90% of structural steel by weight	8%		
5.1 to 5.4	Delivery of Propulsion Machinery by ship set to shipyard - prime mover to propulsor inclusive	7%		
6.1 to 6.4	Delivery of Electrical Equipment Package by ship set to shipyard – generator sets and main switchboard.	5%		
7.1 to 7.4	Hull, deck and wheelhouse enclosed and accepted by Canada	10%		
8.1 to 8.4	Prime movers installed and accepted by Canada.	10%		
9.1 to 9.4	Vessel launched, all Test and Trials completed and accepted by Canada	15%		
10.1 to 10.4	Provisional Acceptance complete and accepted by Canada	5%		
11.1 to 11.4	Delivery and Acceptance of vessels at respective CFB bases	15%		
12.1 to 12.4	Delivery of spares	5%		
13.1 to 13.4	All Technical Data Package elements delivered and accepted by Canada	5%		
14.1.to 14.4	All Training completed and accepted by Canada.	5%		
15.1 to 15.4	Completion of the 12 month warranty period	4%		

The Milestones shown above will be included and identified in all production schedules. Milestone Payment Claims may be submitted per ship if all requirements for the milestone payment have been completed and accepted by Canada.

The respective payments for the vessels delivered, **Milestones 11.1 to 11.4** will be payable by Canada upon delivery and acceptance of the Vessel by Canada, minus the holdback for double the total estimated value of any outstanding Work items as explained at section 7.20.3.

The Holdback for outstanding Work will be payable by Canada upon completion of the outstanding Work and when the Work is accepted by Canada.

The respective payments for completion of the twelve month warranty period, **Milestones 15.1 to 15.4** will be payable by Canada upon completion of the warranty period of each Vessel, minus the total cost of any Work undertaken by Canada to repair any defects subject to warranty.

Note: Technical Manuals will not be returned once approved.

6. Expenditure, Limitation - Contract

Canada's total liability under this Contract shall not exceed \$ TBD, Goods and Services Tax or Harmonized Sales Tax (GST/HST) extra, as appropriate.

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No increase in the total liability of Canada or in the price of Work resulting from any design changes, modifications or interpretations of Annex "A" SRD and SOW, made by the Contractor, will be authorized or paid to the Contractor unless such changes, modifications or interpretations, have been approved, in writing, by the Contracting Authority, prior to their incorporation into the Work. The Contractor shall not be obliged to perform any Work or provide any service that would cause the total liability of Canada to be exceeded without the prior written approval of the Contracting Authority.

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ANNEX "D"

BIDDER'S QUESTIONS AND CANADA'S RESPONSES

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ANNEX "E"

INSURANCE REQUIREMENTS

Ship Builders Risk Insurance

The Contractor shall enter into a contract of insurance issued in the joint names of the Contractor and Canada as their respective interests may appear in the standard form of Marine Builder's Risk Policy to provide full indemnification to Canada for any loss or damage to the vessel or any other materials which are the property of Canada for installation in the vessel in the custody of the Contractor or any claim or expenses to Canada as aforesaid for which the Contractor assumes responsibility hereunder, and the premium or cost of such insurance coverage shall be incorporated into and form part of the purchase price.

Notice of Cancellation: The insurer shall provide to the Contracting Authority at least thirty (30) days prior written notice of any policy cancellation or any adverse material changes in the policy coverage.

Settlement of Claims: Insurance proceeds from any loss or damage to government property must be payable to the appropriate party, as directed by the Contracting Authority.

Marine Liability Insurance, G5003C (2017-08-17)

1. The Contractor must obtain protection and indemnity insurance that must include excess collision liability and pollution liability. The insurance must be placed with a member of the International Group of Protection and Indemnity Associations or with a fixed market in an amount of not less than the limits determined by the [Marine Liability Act](#), S.C. 2001, c. 6. Coverage must include crew liability, if it is not covered by Worker's Compensation as detailed in paragraph (2.) below.
2. The Contractor must obtain worker's compensation insurance covering all employees engaged in the Work in accordance with the statutory requirements of the territory or province or state of nationality, domicile, employment, having jurisdiction over such employees. If the Contractor is subject to an additional contravention, as a result of an accident causing injury or death to an employee of the Contractor or subcontractor, or due to unsafe working conditions, then such levy or assessment must be paid by the Contractor at its sole cost.
3. The protection and indemnity insurance policy must include the following:
 - a. Additional insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - b. Waiver of subrogation rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Department of National Defence and Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.
 - c. Notice of cancellation: The insurer will endeavour to provide the Contracting Authority with a 30 calendar days prior written notice of cancellation.
 - d. Cross liability and separation of insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to

each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

- e. Litigation rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), R.S.C. 1985, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

*Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8*

For other provinces and territories, send to:

*Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8*

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

Errors and Omissions Liability Insurance G2002C, (2008-05-12)

1. The Contractor must obtain Errors and Omissions Liability (a.k.a. Professional Liability) insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature but for not less than \$1,000,000 per loss and in the annual aggregate, inclusive of defence costs.
2. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
3. The following endorsement must be included:

Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.

Commercial General Liability Insurance G2001C (2014-06-26)

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
 - d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
 - g. Employees and, if applicable, Volunteers must be included as Additional Insured.
 - h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
 - i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
 - j. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.
 - k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
 - l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.

-
- m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.
 - n. Advertising Injury: While not limited to, the endorsement must include coverage piracy or misappropriation of ideas, or infringement of copyright, trademark, title or slogan.
 - o. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
 - p. Amendment to the Watercraft Exclusion to extend to incidental repair operations on board watercraft.
 - q. Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.
 - r. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

*Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8*

For other provinces and territories, send to:

*Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8*

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

ANNEX "F"

INSPECTION / QUALITY ASSURANCE / QUALITY CONTROL

1. Conduct of Inspection

(a) Inspections will be conducted in accordance with this Annex "A", the SOW and the Test and Trials Plans and accepted by the Inspection Authority and as detailed in this Annex.

(b) The Contractor must provide its own staff or subcontractors to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in Annex "A" SRD and SOW, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.

(c) As applicable, the Contractor must ensure that the required conditions stated in the Annex "A" SRD and SOW and Test and Trials Plans prevail at the commencement of, and for the duration of, each inspection/test/trial.

(d) The Contractor must ensure that their personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.

(e) The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

2. Inspection Records and Reports

(a) The Contractor on the inspection record, test or trials sheets as applicable must record the results of each inspection. The Contractor must maintain files of completed inspection records.

(b) The Contractor's Quality Control (QC) representative (and the FSR when required) must sign as having witnessed the inspection, test or trial on forward originals of completed inspection records, together with completed test(s) and/or trials sheets to the Inspection Authority as they are completed.

(c) Unsatisfactory inspection/test/trial results, for which corrective action cannot be completed during the normal course of the inspection/test/trial, will require the Contractor to establish and record the cause of the unsatisfactory condition to the satisfaction of the Inspection Authority. Canada representatives may assist in identification where appropriate.

(d) Corrective action to remove cause of unsatisfactory inspections must be submitted to the Contracting Authority and to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Contracting Authority and to the Inspection Authority.

(e) The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.

(f) The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.

(g) Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Contracting Authority and to the Inspection Authority upon request.

3. Inspection and Trials Process

3.1 Drawings and Purchase Orders

(a) Upon receipt of two (2) copies of each drawing or purchase order, the designated Inspection Authority will review its content against the provisions of Annex "A" SRD and SOW. Where discrepancies are noted, the Inspection Authority will formally advise all concerned, in writing using a Discrepancy Notice. The resolution of any such discrepancy is a matter for consultation between the Contractor and other Government of Canada Authorities.

3.2 Inspection

(a) Upon receipt and acceptance of the Contractor's Test and Trials Plans, inspection will consist of a number of Inspection Points supplemented by such other inspections, tests, demonstrations and trials as may be deemed necessary by the Inspection Authority to permit him to certify that the work has been performed in compliance with the provisions of Annex "A" SRD and SOW. The Contractor must be responsible for notifying the designated Inspection Authority of when the work will be available for inspection, sufficiently in advance to permit the designated Inspection Authority to arrange for the appropriate inspection.

(b) The Inspection Authority will inspect the materials, equipment and work throughout the project against the provisions of the Annex "A" SRD and SOW and, where non-conformances are noted, will issue appropriate INSPECTION NON-CONFORMANCE REPORTS.

(c) The Contract requires the implementation of a Quality Assurance/Quality Control system, so the Inspection authority must require that the Contractor provide a copy of its internal inspection report pertaining to a work item before conducting the requested inspection. If third party inspections are required by the Contract (e.g. inspections by a certified CWB 178.2 welding inspector), the reports of these inspections must be required before the Work is inspected by the Inspection Authority.

(d) The QA/QC system is a requirement, so if the documentation is presented to the Inspection Authority before an inspection stating that the Work is satisfactory but the Inspection Authority finds that the Work has not been satisfactorily inspected, the Inspection Authority must issue an Inspection Non-conformance Report against the Work and another against the failure of the Contractor's QA/QC system.

(e) Before carrying out any inspection, the Inspection Authority must review the requirements for the Work and the acceptance and/or rejection standards to be applied. Where more than one standard or requirement is called up and they are potentially conflicting, the Inspection Authority must refer to the order of precedence in the Contract to determine the standard or requirement to be applied.

3.3 Inspection Non-conformance report

(a) An Inspection Non-conformance report will be issued for each non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the non-conformance.

(b) When the non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the Report by adding an applicable signed and dated notation.

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(c) At the end of the project, the content of all Inspection Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Acceptance documents before the Inspection Authority's certification of such documents.

3.4 Tests, Trials, and Demonstrations

(a) The Contractor must keep written records of all tests, trials, and demonstrations conducted required by the QA System.

(b) The Contractor must in all respects be responsible for the conduct of all tests and trials in accordance with the requirements of the Contract.

(c) The Contracting Authority and the Inspection/Technical Authority reserve the right to defer starting or continuing with any sea trials for any reasonable cause including but not limited to adverse weather, visibility, equipment failure or degradation, lack of qualified personnel and inadequate compliance with safety standards

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ANNEX "G" to PART 3 OF THE BID SOLICITATION

EVALUATION MATRIX

See attached as a separate document

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ANNEX "H"

CONTRACT FINANCIAL SECURITY

PART 1

1. If our proposal is accepted, we understand we will be required to provide contract financial security as follows:

- (i) (a) A Performance Bond in the amount of twenty (20) percent of the total bid price for the four (4) Naval Large Tugs (NLT), in the form prescribed below and issued by a surety company listed below; and
(b) A Labour and Material Payment Bond in the form prescribed below, and issued by an approved surety company listed below, in the amount of ten (10) percent of the total bid price for the four (4) Naval Large Tugs; or
- (ii) A Security Deposit to the value of ten (10) percent of the total bid price for the four (4) Naval Large Tugs; or
- (iii) An Irrevocable Standby Letter of Credit to the value of ten (10) percent of the total bid price or four (4) Naval Large Tugs.

2. Contractor shall provide Contract Financial Security as above within 14 calendar days of contract award.

3. During the performance of the Contract, if the Contractor does not comply with all the terms and conditions of the contract, Canada may demand payment under the contract financial security in accordance with its terms. Proceeds from the Contract financial security shall be applied in accordance with the terms and conditions of the contract.

NOTE: The above-mentioned bonds are also available electronically on the following Public Works and Government Services Canada Website address:

<http://www.pwgsc.gc.ca/acquisitions/text/forms-e.html> and must be accepted as security by one of the insurance companies listed in Treasury Board Contracting Policy, Appendix L, Acceptable Bonding Companies <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494§ion=text#appL>

4. In this clause,

(a) "security deposit" means:

- (1) a bill of exchange
- (i) that is payable to the Receiver General for Canada, and
- (ii) that is certified by an approved financial institution or drawn by an approved financial institution on itself; or
- (2) a Government guaranteed bond; or
- (3) an irrevocable standby letter of credit, or
- (4) such other security as may be deemed appropriate by the Contracting Authority (Department of Public Works and Government Services) and approved by Treasury Board;

(b) "approved financial institution" means:

- (1) any corporation or institution that is a member of the Canadian Payments Association;
- (2) a corporation that accepts deposits that are insured by the Canada Deposit Insurance

Corporation or the "Régie de l'assurance-dépôts du Québec" to the maximum permitted by law;

(3) a credit union as defined in the Income Tax Act; or

(1) a corporation that accepts deposits from the public, if repayment of the deposits is guaranteed by Canada in right of a province.

(c) "Government guaranteed bond" means a bond of the Government of Canada or a bond unconditionally guaranteed as to principal and interest by the Government of Canada that is:

(2) payable to bearer; or

(3) accompanied by a duly executed instrument of transfer of the bond to the Receiver General for Canada in accordance with the Domestic Bonds of Canada Regulations; or

(4) registered in the name of the Receiver General for Canada.

(d) "irrevocable standby letter of credit" means any arrangement, however named or described, whereby a financial institution (the "Issuer"), acting at the request and on the instructions of a customer (the "Applicant"), or on its own behalf, is to make a payment to or to the order of Canada, as the beneficiary, or is to accept and pay bills of exchange drawn by Canada, or authorizes another financial institution to effect such payment, or accept and pay such bills of exchange, or authorizes another financial institution to negotiate, against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with.

The letter of credit shall:

(1) state the face amount that may be drawn against it;

(2) state its expiry date;

(3) provide for sight payment to the Receiver General for Canada by way of the financial institution's draft against presentation of a written demand for payment signed by the authorized departmental representative identified in the letter of credit by his\her office;

(4) provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face amount of the letter of credit;

(5) provide that it is subject to the International Chamber of Commerce (ICC) Uniform Customs and Practice for Documentary Credits, 1993 Revision, ICC Publication No. 500;

(6) clearly specify that it is irrevocable or deemed to be irrevocable pursuant to article 6c) of the ICC Uniform Customs and Practice for Documentary Credits, 1993 Revision, ICC Publication No. 500; and

(7) be issued or confirmed, in either official language, by a financial institution which is a member of the Canadian Payments Association and is on the letterhead of the Issuer or Confirmer. The format is left to the discretion of the Issuer or Confirmer.

(e) "completion of warranty period" means the later of the date upon which the warranty period expires by the passage of time or the date upon which the obligation of the Contractor related to the warranty provisions of the Contract have been fulfilled.

Part 2
PERFORMANCE BOND

No. _____

\$ _____

KNOW ALL MEN BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto _____ as Obligee, hereinafter called Canada, in the amount of _____ Dollars (\$ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ 20 _____.

WHEREAS, the Principal has submitted a written proposal to Canada, dated the _____ day of _____, 20 _____ for _____ which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall well and faithfully observe and perform all the obligations on the part of the Principal to be observed and performed in connection with the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

(1) Whenever the Principal shall be, and declared by Canada to be, in default under the Contract, the Surety shall:

(a) if the work is not taken out of the Principal's hands, remedy the default of the Principal,
(b) if the work is taken out of the Principal's hands and Canada directs the Surety to undertake the completion of the work, complete the work in accordance with the Contract provided that if a contract is entered into for the completion of the work,

(i) it shall be between the Surety and the completing contractor, and

(ii) the selection of such completing contractor shall be subject to the approval of

Canada,

(c) if the work is taken out of the Principal's hands and Canada, after reasonable notice to the Surety, does not direct the Surety to undertake the completion of the work, assume the financial responsibility for the cost of completion in excess of the moneys available to Canada under the Contract,

(d) be liable for and pay all the excess costs of completion of the Contract, and

(e) not be entitled to any Contract moneys earned by the Principal, up to the date of his default on the Contract and any holdbacks relating to such earned Contract moneys held by Canada, and the liability of the Surety under this Bond shall remain unchanged provided, however, and without restricting the generality of the foregoing, upon the completion of the Contract to the satisfaction of Canada, any Contract moneys earned by the Principal or holdbacks related thereto held by Canada may be paid to the Surety by Canada.

- (2) The Surety shall not be liable for a greater sum than the amount specified in this Bond.
(3) No suit or action shall be instituted by Canada herein against the Surety pursuant to these presents after the expiration of two (2) years from the date on which final payment under the Contract is payable.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal

Witness Surety

NOTE: Affix Corporate seal if applicable.

LABOUR AND MATERIAL PAYMENT BOND

No. _____

\$ _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ as Principal, hereinafter called the Principal, and _____ as Surety, hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto _____ as Oblige, hereinafter called Canada, in the amount of _____ Dollars (\$ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____ 20 ____

WHEREAS, the principal has entered into a Contract with Canada, dated the _____ day of _____ 20 ____ for _____ which contract is by reference made a part hereof, and is hereinafter referred to as the Contract. NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that, if payment is promptly made to all Claimants who have performed labour or services or supplied material in connection with the Contract and any and all duly authorized modifications and extensions of the Contract that may hereafter be made, notice of which modifications and extensions to the Surety being hereby waived, then this obligation shall be void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

- (1) For the purpose of this bond, a Claimant is defined as one having a direct contract with the Principal or any Subcontractor of the Principal for labour, material or both, used or reasonably

required for use in the performance of the Contract, labour and material being constituted to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rental of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.

(2) For the purpose of this bond, no payment is required to be made in respect of a claim for payment for labour or services performed or material supplied in connection with the Contract that represents a capital expenditure, overhead or general administration costs incurred by the Principal during the currency or in respect of the Contract.

(3) The Principal and the Surety hereby jointly and severally agree with Canada that if any Claimant has not been paid as provided for under the terms of its contract with the Principal or a Subcontractor of the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's labour or service was done or performed or materials were supplied by such Claimant, Canada may sue on this bond, have the right to prosecute the suit to final judgement for such sum or sums as may be due and have execution thereon; and such right of Canada is assigned by virtue of Part VIII of the Financial Administration Act to such Claimant.

(4) For the purpose of this bond the liability of the Surety and the Principal to make payment to any claimant not having a contract directly with the Principal shall be limited to that amount which the Principal would have been obliged to pay to such claimant had the provisions of the applicable provincial or territorial legislation on lien or privileges been applicable to the work. A claimant need not comply with provisions of such legislation setting out steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had. Any such claimant shall be entitled to pursue a claim and to recover judgment hereunder subject to the terms and notification provisions of the Bond.

(5) Any material change in the Contract between the Principal and Canada shall not prejudice the rights or interest of any Claimant under this bond who is not instrumental in bringing about or has not caused such change.

(6) No suit or action shall be commenced hereunder by any Claimant:

(a) Unless such Claimant shall have given written notice within the time limits hereinafter set forth to the Principal and the Surety above named, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal and the Surety at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given

(i) in respect of any claim for the amount or any portion thereof required to be held back from the Claimant by the Principal or by the Subcontractor of the Principal under either the terms of the Claimant's Contract with the Principal or the Claimant's Contract with the Subcontractor of the Principal within one hundred and twenty (120) days after such Claimant should have been paid in full under its Contract,

(ii) in respect of any claim other than for the holdback or portion thereof referred to above within one hundred and twenty (120) days after the date upon which such Claimant did or performed the last of the service, work or labour or furnished the last of the

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materials for which such claim is made under the Claimant's Contract with the Principal or a Subcontractor of the Principal;

(b) After the expiration of one (1) year following the date on which the Principal ceased work on the said Contract, including work performed under the guarantees provided in the Contract;

(c) Other than in a court of competent jurisdiction in the province or district of Canada in which the subject matter of the Contract or any part thereof is situated and not elsewhere, and the parties hereto hereby agree to submit to the jurisdiction of such court.

(7) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

(8) The Surety shall not be entitled to claim any moneys relating to the Contract and the liability of the Surety under this Bond shall remain unchanged and, without restricting the generality of the foregoing, the Surety shall pay all valid claims of Claimants under this Bond before any moneys relating to the Contract held by Canada are paid to the Surety by Canada.

(9) The Surety shall not be liable for a greater sum than the amount specified in this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal

Witness Surety

NOTE: Affix Corporate seal if applicable

THIS GUARANTEE made in duplicate as of the _____ day of _____, 20__.

BETWEEN: HER MAJESTY THE QUEEN in right of
Canada (hereinafter called "Her Majesty") as
represented by the Minister of Public
Works and Government Services
(hereinafter called the "Minister")

OF THE FIRST PART

AND: _____, a company incorporated under the laws
of _____, with an office at

(hereinafter referred to as the "Guarantor")

OF THE SECOND PART

WHEREAS the Minister proposes to enter into Contract Serial No. _____
(hereinafter referred to as "the "Contract") with _____ (hereinafter referred to as the
"Contractor") for the _____, all as specified or
described in the Contract; AND

WHEREAS the Guarantor acknowledges that the Minister is willing to enter into such
Contract only if the Guarantor guarantees the performance of the obligations of the Contractor
unconditionally and irrevocably; AND

WHEREAS the Guarantor has agreed to guarantee to the Minister unconditionally and
irrevocably the Contractor's performance of all the Contractor's obligations under the Contract;
NOW THEREFORE, in consideration of the Minister's issuance of the Contract, and the
mutual covenants, promises, conditions and agreements hereinafter set out, the parties hereby
agree:

1) The Guarantor unconditionally and irrevocably guarantees the performance and fulfilment
of each and every obligation of the Contractor contained in or flowing from the Contract. In
this Guarantee "obligation" includes all representations and warranties of the Contractor, all
undertakings and promises of the Contractor and the payment of all damages for which the
Contractor may become liable to the Minister in relation to the Contract.

2) The Minister shall not be obliged to resort to or exhaust any recourse which it may have
against the Contractor or any other person before being entitled to claim against the
Guarantor.

3) If the Contractor should fail to perform or fulfill any of its obligations, then forthwith upon
the date of receipt by the Guarantor of a written call from the Minister, the Guarantor
shall undertake or cause to be undertaken the performance of all outstanding obligations
as a primary obligor and not as surety, and the Guarantor does hereby guarantee to
indemnify and save harmless the Minister from and against all damages and claims of
any nature relating to or occasioned by the Contractor's failure to perform or discharge
each and every one of the obligations, conditions and liabilities on the part of the
Contractor to be observed or performed under the Contract.

4) It is further understood and agreed that the receipt by the Contractor or the Guarantor of
any monies paid by the Minister to the Contractor or the Guarantor, as the case may be,
under or in respect of the Contract, shall be in complete discharge and release to the
Minister for and in respect of all monies so paid irrespective of the date when or the

party to whom, but for this Guarantee, such monies were or might, or would have been payable.

5) No dealings of whatsoever kind between the Minister and the Contractor whether with or without notice to the Guarantor, shall exonerate the Guarantor in whole or in part, and in particular, but without limitation, the Minister may modify, amend or vary the Contract, exercise options, issue new contracts, grant any indulgence, release, postponement or extension of time, waive any term or condition of the Contract or any obligation of the Contractor, take or release any securities or other guarantees for performance and otherwise deal with the Contractor, the Contract in question, and any other persons as the Minister may see fit, without affecting, lessening or impairing in any way the liability of the Guarantor.

6) No assignment of the Contract, subcontract or any other dealings therewith by the Contractor, whether with or without the consent of the Minister, shall affect this Guarantee.

7) Nothing whatsoever except the performance in full of all of the obligations of the Contractor under the Contract shall discharge the Guarantor of this Guarantee.

8) Wherever any determination of any dispute is made pursuant to the provisions of the Contract or any settlement or any judgment or finding of a court of competent jurisdiction is issued or made which is binding upon the Contractor in respect of the Contract, such determination or judgment or finding shall be binding upon the Guarantor.

9) Any settlement between the Contractor and the Minister and any determination made pursuant to any provision of the Contract which is expressed to be binding upon the Contractor shall be immediately binding upon the Guarantor.

10) This Guarantee shall not be impaired by any loss of any security now or hereafter held by or on behalf of the Minister, whether occasioned through its fault, negligence or otherwise (including without limitation any loss occasioned by the failure to register, perfect, maintain the registration or perfection of, re-register, re-perfect or renew any such security or filing of any financing statement, financing change statement or other document, instrument or thing whatsoever).

11) Demands and calls under this Guarantee may be made by the Minister from time to time.

12) No delay on the part of the Minister in exercising any of its options, powers or rights hereunder or any partial or single exercise thereof shall constitute a waiver thereof. No waiver of any of the Minister's options, powers or rights hereunder and no modification of this Guarantee shall be effective unless the same shall be in writing, duly signed on behalf of the Minister and each such waiver, if any, shall apply only with respect to the specific instance involved, and shall in no way impair the options, powers or rights of the Minister or the obligations of the Guarantor hereunder in any other respect or at any other time.

13) This Guarantee is in addition and without prejudice to any security of any kind or any other Guarantee which may at any time after the date hereof be acquired by the

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Minister and any other rights or remedies that the Minister might have against the Contractor.

14) This Guarantee shall be in force and effect from the date of execution of the Contract until all obligations of the Contractor under the Contract have been fulfilled to the satisfaction of the Minister.

15) This Guarantee shall be governed by the laws in force in the Province of Ontario, Canada. IN WITNESS WHEREOF this Guarantee has been executed and sealed on behalf of the Minister by the Authorized officers of the Department of Public Works and Government Services and by the Guarantor under its corporate seal duly attested by the hands of its respective officers authorized in that behalf.

**SIGNED, SEALED AND DELIVERED:
MINISTER OF PUBLIC WORKS AND
GOVERNMENT SERVICES**

Name/Title

– Corporate Secretary
[Name of Guarantor]

Name/Title

Name/Title
(We have authority to bind the corporation)
Reviewed by / Révisé par
Legal Branch / Services juridiques
.....
Date.....

ANNEX "I" to PART 5 OF THE BID SOLICITATION

FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY – CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit [Employment and Social Development Canada \(ESDC\) – Labour's](#) website.

Date: _____ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- A1. The Bidder certifies having no work force in Canada.
- A2. The Bidder certifies being a public sector employer.
- A3. The Bidder certifies being a [federally regulated employer](#) being subject to the [Employment Equity Act](#).
- A4. The Bidder certifies having a combined work force in Canada of less than 100 permanent full-time and/or permanent part-time employees.

A5. The Bidder has a combined workforce in Canada of 100 or more employees; and

- A5.1. The Bidder certifies already having a valid and current [Agreement to Implement Employment Equity](#) (AIEE) in place with ESDC-Labour.
- OR**
- A5.2. The Bidder certifies having submitted the [Agreement to Implement Employment Equity \(LAB1168\)](#) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

- B1. The Bidder is not a Joint Venture.

OR

- B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

Annex A
Statement of Work
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ANNEX A

STATEMENT OF WORK

FOR THE

NAVAL LARGE TUG PROJECT

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List of Acronyms and Abbreviations

AIL	Action Item List
ANSI	American National Standards Institute
AOPS	Arctic Offshore Patrol Ship
AR	Acceptance Review
CA	Contract Authority
cd	Calendar Days
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CFAV	Canadian Forces Auxiliary Vessel
CFB	Canadian Forces Base
CFTO	Canadian Forces Technical Order
CSC	Canadian Surface Combatant
DIDs	Data Item Descriptions
DND	Department of National Defence
DSIP	Delegated Statutory Inspection Program
DVD	Digital Versatile Disc
EIAPP	Engine International Air Pollution Prevention
ELA	Electrical Load Analysis
EXIF	Exchangeable Image File Format
IA	Inspection Authority
IACS	International Association of Classification Societies
ILS	Integrated Logistics Support
JPEG	Joint Photographic Experts Group
JSS	Joint Support Ship
LCG	Longitudinal Centre of Gravity
MACA	Month(s) after contract approval
MARLANT	Maritime Forces Atlantic

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MARPAC	Maritime Forces Pacific
MEL	Master Equipment List
MPR	Monthly Progress Report
MPRM	Monthly Progress Review Meeting
MSDS	Material Safety Data Sheets
NLT	Naval Large Tug
OEM	Original Equipment Manufacturer
PDF	Portable Document Format
PDR	Preliminary Design Review
PMP	Project Management Plan
PNG	Portable Network Graphics
QHM	Queen's Harbour Masters
QMS	Quality Management System
RCN	Royal Canadian Navy
RSPL	Recommended Spare Parts List
SARQS	Shipbuilding and Repair Quality Standard
SNAME	Society of Naval Architects and Marine Engineers
SOW	Statement of Work
SRD	System Requirements Document
TA	Technical Authority
TCG	Transverse Centre of Gravity
TC	Transport Canada
TCMS	Transport Canada Marine Systems
TDAN	Technical Data Action Notice
TDP	Technical Data Package
TPRM	Technical Progress Review Meeting
TSFR	Trim, Stability and Freeboard Report
VCG	Vertical Centre of Gravity

Annex A
Statement of Work
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WBS	Work Breakdown Structure
WHMIS	Workplace Hazardous Material Information System

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Annex A
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List of Reference Documents

ISO 10005 - Guidelines for Quality Plans

D-03-003-024/SG-001, Work Breakdown Structure for Canadian Forces Ships and Submarines,
14 February 2012

TP 7301, STAB 1 to 8

IEEE 45. A Guide to Electrical Installations on Shipboard

C-03-001-024/MS-003, Procedures for Conducting Inclining Experiments on Canadian Forces
Surface Ships, 15 July 1997

D-01-400-002/SF-000, Specification for Levels of Engineering Drawings and Associated
Lists, 01 March 2011

ASME Y14.1M

ASME Y.100M-1998

ASME standards (in general)

CAN/CSA -Z234.1-89 Canadian Metric Practices Guide

ISO 9660

DLM-009-022/SG-000, Standard for Packaging of Documentation, 16 January 1981

ANSI standards

Maritime Occupational Health and Safety Regulations

TP 3685 Standards Respecting Noise Control and Hearing Protection in Canadian Towboats
Over 15 Tons, Gross Tonnage

TP1861

Systems Requirements Document of Annex A

1 000 General Guidance and Administration

1.1 Purpose

This Statement of Work (SOW) defines the work effort required to design, construct, test, trial and deliver Naval Large Tug (NLT) boats to Canadian Forces Base (CFB) Esquimalt, British Columbia and CFB Halifax, Nova Scotia in accordance with the technical and performance requirements of the Systems Requirements Document (SRD) of Annex A and the work requirements detailed herein.

The Contractor must complete all the work required in order to complete the design, construction, test, trial and delivery of four (4) Naval Large Tugs (NLT) in accordance with the Contract, this SOW and the SRD of Annex A.

1.2 Background

Naval tug services in Maritime Forces Atlantic (MARLANT) and Maritime Forces Pacific (MARPAC) are provided by Queen Harbour Masters (QHM) Halifax and Esquimalt respectively. All naval tugs are owned and maintained by Department of National Defence (DND). They are operated as Canadian Forces Auxiliary Vessels (CFAVs) and are crewed by civilian personnel. Five GLEN Class tugs (three in Halifax and two in Esquimalt) are presently the largest and most powerful tugs in the Royal Canadian Navy (RCN) inventory and form the backbone of the MARLANT/ MARPAC tug fleet. The GLEN tugs were acquired between 1975-77.

The present Halifax Class and forthcoming Joint Support Ship (JSS), Arctic Offshore Patrol Ship (AOPS) and Canadian Surface Combatants (CSC) will be home-ported in CFB Esquimalt and CFB Halifax.

The GLEN tugs are pushed to their limits in dealing with the existing fleet and will not be powerful enough to handle the growing inventory of larger ships. In addition, the GLEN Class tugs are reaching the end of their technical life expectancy and have un-supportable and obsolete propulsion systems that do not generate enough Bollard Pull to safely assist the current and future fleets of the RCN in berthing/un-berthing operations.

DND has a requirement for the design, construction, test, trial and delivery of four (4) NLT boats to replace the existing tugs described above. The primary mission of the NLTs will be to provide a platform to conduct moves of larger RCN vessels, along with providing afloat firefighting capability (FIFI Class 1), in the harbors of both coasts.

1.3 Objective

The objective of the work specified herein is to carry out the engineering and shipbuilding effort to construct the NLTs. This work will include the development of a NLT design, compliant with this SOW and identified technical requirements, construction of the NLTs to classification and regulatory requirements and approvals, including; tests and trials and delivery of the NLTs, the required technical documents, training and spares suitable to support the operational readiness of the NLTs for a period of two (2) years post-delivery.

The NLT Project will include the following phases: Preliminary Design Phase, Critical Design Phase, Construction, Tests and Trials, Certification, Acceptance, Delivery and Warranty.

The Contractor will have total system responsibility for the development of the NLT design based on a proven, in-service vessel.

The Contractor must perform all work required to meet all Regulatory Body requirements for Canada Shipping Act certification for vessels employed within an area of operation designated as Near Coastal

Voyage Class 2. The Contractor shall have Classification Society, perform those regulatory activities delegated by Transport Canada under the Delegated Statutory Inspection Program (DSIP).

The Contractor must provide initial Integrated Logistic Support defined herein.

1.4 Scope

The Contractor must prepare drawings, calculations and reports as necessary to carry out the Work in accordance with this Statement of Work (SOW).

The vessels must be built in-class with all applicable Certificates provided.

The Contractor must obtain all the appraisals or approvals necessary under the Contract from the Classification Society, Transport Canada and other Regulatory Bodies as defined in the Contract and any others as required to operate the NLTs in Canada for Test and Trials.

Where the SRD of Annex A stipulates Classification Society rules or notations, the Contractor must obtain an appraisal or approval, as the case may require, from the Classification Society. Where the SRD of Annex A refers to the rules or requirements of a Regulatory Body, the Contractor must provide proof of compliance in the deliverable. The Classification Society must act and provide certificates on behalf of Transport Canada for all areas delegated under DSIP.

The Contractor must provide the necessary building facilities, along with the necessary tools, jigs, engineering, labour, and material to design, build, test, launch, outfit, trial and deliver the NLTs complete and ready for service.

The Contractor must design, build, test, launch, outfit, trial and deliver the NLTs in accordance with the SRD of Annex A, this SOW and the Terms and Conditions of the Contract.

The Contractor must provide upkeep, including during tests and trials, for the NLTs until delivery and Acceptance by Canada.

The Contractor must ensure that, unless otherwise indicated, all material, equipment, and machinery be supplied, installed, set to work, calibrated, integrated, tested, trialed, and stowed, as applicable, such that the NLTs are ready for unrestricted operations upon delivery.

The Contractor must ensure that all machinery, equipment and fittings are in compliance with the Contract.

The Contractor shall provide and install the power distribution system with switchboards, transformers, panel boards, cabling, breakers and receptacles in accordance with the Regulatory Body approved One-line Diagram and all related drawings. The Primary Power Distribution system is the preferred supply for all equipment above 1 kW.

The propulsor manufacturer shall approve the propulsion related structure and all structural details prior to building.

The Contractor must carry out all the Work using the International Standards units of measurements (commonly known as the Metric System) and must use them consistently throughout the work. This must include all fastenings with the exception of equipment and machinery supplied by third parties where the Imperial fastening system is standard for the manufacturer.

The scope of this work includes this SOW and all requirements identified in Appendix A Contract Data Requirements List (CDRL) and Appendix B Data Item Descriptions (DIDs).

The Contractor must perform all work necessary to deliver the data in accordance with the requirements specified in the DIDs and the CDRL.

1.5 Single Shipyard

The Contractor must construct all four (4) NLTs at the same Contractor facility. For this purpose a Contractor facility is taken to be all Contractor and Sub-Contractor resources used to support a final single assembly location.

1.6 Applicable Documents

If any referenced standard or regulation has been superseded by a new version prior to contract Award then the Contractor must use the new version of the standard or regulation.

If any referenced standard or regulation has become obsolete prior to contract Award and has been replaced by a new standard then the Contractor must use the replacement standard or regulation.

If any referenced standard or regulation has become obsolete prior to contract Award and has not been replaced then the Contractor must use an equivalent standard or regulation as agreed to by Canada.

1.6.1 Canadian Government Documents

Where government standards or regulation are referenced in this document, the whole standard or regulation will apply unless specifically directed otherwise. The reference will indicate what tailoring, if any, is required by Canada.

1.6.2 Non-Government Documents

Where non-government standards are referenced in this document, the whole standard will apply unless specifically directed otherwise. The reference will indicate what tailoring is required by the TA.

All references to Government requirements and standards in the MIL-STD specifications or other foreign government must be understood as Canadian Government / Organizations, in place of United States Government/Organizations or others.

1.6.3 Precedence of Documents, Standards and Regulations

The order of precedence of documents, standards and regulations will be in accordance with Table 1 .

Table 1 Precedence of Documents, Standards and Regulations

Order of Precedence of Documents, Standards and Regulations from Highest to Lowest:	
1	Regulations / Regulatory Body Requirements
2	The clauses of the Contract
3	This SOW
4	The SRD of Annex A
5	Classification Society Rule Sets
6	Government Standards
7	Non-Government Standards

2 040 Ship System Management

2.1 041 Project Management

2.1.1 General

Once accepted by Canada all developed plans must be used by the Contractor to manage the activities of this Contract. Throughout the duration of the Contract the Contractor must inform Canada of any changes that affect the execution of any of the identified plans and submit a revised version for Canada's acceptance if requested.

2.1.2 Project Management Plan

The Contractor must prepare and submit a Project Management Plan (PMP) for Canada's review and acceptance in accordance with CDRL-M-001 and DID-M-001 Project Management Plan. The PMP must identify how the Contractor intends to fulfill the project management requirements of this SOW.

Once accepted, the Contractor must manage the Work in accordance with the PMP throughout the duration of the performance of the Work.

2.1.3 Master Plan and Schedule

The Contractor must prepare, deliver and maintain a project schedule to identify when the Contractor intends to fulfill the requirements of this SOW, in accordance with CDRL-M-002 and DID-M-002 Master Plan and Schedule for Canada's review.

2.1.4 Quality Plan

The Contractor must implement and maintain a Quality Management System (QMS), certified to the current version of the ISO 9001:2000 standard.

The Contractor must inform Canada of any changes to the certification status of the Contractor's QMS.

The Contractor must use reasonable commercial efforts to ensure that all other Subcontractors and Suppliers comply with appropriate quality management requirements.

The Contractor must deliver and maintain a Quality Plan that describes how the Contractor will implement the QMS throughout the Work in accordance with CDRL-M-003 and DID-M-003 Quality Plan for Canada's review.

Following delivery of the Quality Plan by Canada, the Contractor must implement the Quality Plan in conduct of the Work.

The Contractor must make appropriate amendments to the Quality Plan throughout the term of the Contract to reflect any changes to current and planned quality management activities.

Amendments to the Quality Plan must be reviewed by Canada before they come into force.

The Contractor must make available to Canada any documents referenced in the Quality Plan when requested by Canada.

2.1.5 Risk Management Plan

The Contractor must prepare and submit a Risk Management Plan for Canada's Review and Acceptance, for all applicable DIDs and CDRLs.

The Contractor must identify, manage, record, and track risks to the completion of the Work in accordance with CDRL-M-004 and DID M-004 Risk Management Plan. The Contractor must report project risks and submit risk tracking sheets at progress review meetings for Canada's review.

2.1.6 Technical Data Management

The Contractor must have or develop a process to track and manage the configuration of technical and other data produced during the Work. The contractor must deliver documentation of this process in accordance with CDRL-M-005 and DID-M-005 Technical Data Management Plan for Canada's review and acceptance.

2.1.7 Change Management Plan

The Contractor and Canada must have a common mechanism to initiate changes to the Contract, a common Change Request Form.

The Contractor must utilize the Change Request Form in accordance with CDRL-M-006 and DID-M-006 Change Request Form.

The Contractor must utilize the Change Request Form in order to initiate any change request to the Contract that requires the acceptance of the proposed change by both the Contractor and Canada.

2.1.8 Test and Trials Plan

The Contractor must develop a test and trial program, test procedures and trials agenda and test recording sheets based on:

- Classification Society and Regulatory Body requirements;
- SNAME T&R Bulletin 3-47 Guide for Sea Trials 1989;
- Factory Acceptance Tests, as required, to demonstrate equipment and systems meet the design specifications;
- The machinery and equipment supplier's requirements for post installation inspection and testing; and

The Contractor developed Test and Trials Program must be developed and submitted in accordance with the following:

- CDRL-TT-001 and DID-TT-001 Dock Trial Plan and Procedure
- CDRL-TT-002 and DID-TT-002 Sea Acceptance Trials and Procedures
- CDRL-TT-003 and DID-TT-003 Inclining Test Plan and Procedure
- The Contractor must identify all test and trials required to demonstrate compliance with the SRD of Annex A, this SOW, and all Classification Society and Regulatory requirements.

In addition to the test and trials the Contractor identifies as necessary to demonstrate the requirements of NLT SRD of Annex A, this SOW, regulatory requirements and Class Society, the Technical Authority may request additional test and trials be included in the Test and Trials Plan and conducted by the Contractor at the Contractor's expense. Where the Contractor identifies the requirements of a test and/or trial that

can be suitably demonstrated by another identified test and trial a request to combine these may be submitted to Canada for consideration. Canada reserves the right to retain any or all tests and trials as stand-alone trials until such time until the Contractor receives written agreement to any proposed combining of such tests and trials.

The Contractor must conduct NLT tests in both normal and simulated emergency operational conditions as applicable.

The Contractor must ensure that equipment and personnel are available to support the test or trial program.

The Contractor must ensure that Canada is provided no less than 15 calendar days advance notice of all tests or trials.

The Contractor must schedule and co-ordinate NLT test and trials in accordance with the Test and Trial schedule developed as part of the Test and Trials plan.

All test and trials are to be conducted on each NLT with the exception of speed/power and torsional vibration tests. Speed/power and torsional vibration tests must be conducted by the Contractor on the first NLT platform only unless other factors indicate that the results on subsequent NLTs could be significantly different from the first NLT platform. If such factors are observed the speed/power and torsional test must be repeated on the respective NLT.

The Contractor must develop and deliver to Canada agendas for all tests and trials. The agendas must describe the methodologies and procedures to be used for each test and trial. The agendas must include all pass/ fail criteria and clearly indicate how these criteria will be measured. The test and trials agendas must include a description of test and recording equipment that will be used during the respective test or trial.

The Contractor must ensure that equipment/components are not run in a condition that invalidates the OEM's warranty.

The Contractor is responsible for the provision of all instrumentation and data collection equipment necessary to obtain and record the data required to assess the performance of the system undergoing the test or trial. Instrumentation used in testing machinery and equipment must be calibrated no more than 90 days before tests. The calibration records for all equipment must be submitted to the TA along with the test and trials report.

The Contractor must be responsible for developing a formal trials record and providing space therein for the identification and the recording of all data relevant to ensuring that each item and system is performing according to specified requirements and OEM performance criteria.

During construction of the vessel(s), the Contractor must arrange for regular inspections and upon completion of the construction of the vessel(s), the Contractor must arrange trials. All Inspections and test and trials performed must be in accordance with the SRD of Annex A and this SOW - Inspection/Quality Assurance/Quality Control.

The Contractor must develop and update, as required, the Test and Trials Plans as required by the SRD of Annex A and this SOW and submit to Canada for review. The Contractor shall amend the Test and Trials Plans to the satisfaction of Canada.

Once approved, any modification to the Test and Trials Plan must be pre-approved by Canada. A revised Test and Trials Plan will be required should any modification be made. If the NLT fails to meet requirements set forth in the SRD of Annex A, and/or any regulatory or Classification Society requirements, the Contractor must correct the deficiencies and repeat all failed tests or trials. Deficiencies must be corrected prior to scheduling of additional tests or trials.

To enable the Inspection Authority to certify that the Work has been performed satisfactorily, in accordance with the Contract and specifications, the Contractor must schedule, co-ordinate, perform, and record all specified tests, trials and demonstrations required by the Inspection Authority and the Specifications and any additional tests and trials performed by the Contractor required by the Inspection Authority.

Where the specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.

Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.

Where the Specifications do not contain specific performance requirements for any component, equipment, sub-system or system, the Contractor must demonstrate such component, equipment, sub-system or system to the satisfaction of the Inspection Authority.

The Contractor must co-ordinate each test, trial and demonstration with all interested parties, including the Inspection, Contracting and Technical Authorities; regulatory authorities; Classification Society; Sub-contractors; as required. The Contractor must provide the Inspection Authority and other Government of Canada Authorities with a minimum of ten (10) working days notice of each scheduled test, trial, or demonstration.

2.1.9 Build Strategy

The Contractor must document and deliver the Build Strategy in accordance with CDRL-M-013 and DID-M-013 for Canada's review.

2.1.10 Training Plan

The Contractor must provide at least 37.5 hours of shore-based equipment training on the operational characteristics and systems of the vessel to all tug crews and to any other TA designated representatives.

The Contractor must develop a Training Plan indicating how and when it intends to deliver crew training in accordance with CDRL-T-001 and DID-T-001 Training Plan. All training must be completed one (1) month prior to acceptance of each vessel.

The Contractor must maximize the use of existing documentation as instructional materials (e.g., equipment/system technical manuals, ship/vessel construction/equipment drawings, and engineer's operating manual) and emphasize the operations, maintenance, and peculiarities of the system or equipment being discussed.

Intellectual property rights for training courseware must permit reproduction, translation use and distribution of the training materials for use by DND or Canada and its representatives for as long as DND retains the NLT.

The Contractor must conduct the training over five contiguous weekdays.

The Contractor provided training must cover all topics described in the Training Plan.

The training must take place either on board the NLT or at a Contractor supplied venue, or a combination of both, as appropriate. The Contractor must ensure that access to the NLT is granted during the training period for the purpose of NLT and equipment familiarization and that any equipment or system on which training is provided is in a state of functionality that allows practical demonstrations to occur.

Subject matter experts from the equipment or system supplier must conduct the equipment training portion of the training.

The Contractor must provide a lunch break and two health breaks each day during the shore based training.

The contractor must arrange shore based equipment training session to accommodate up to 30 attendees but not less than 20 attendees on behalf of Canada in a single session.

In addition to shore based training, the Contractor must provide eight (8) hours of formal underway familiarization for each vessel crew, total of four (4), prior to Acceptance of their vessel.

Formal underway familiarization must include, but not be limited to, ship-handling exercises, shipboard navigation electronic systems, machinery control systems, and emergencies such as loss of power, and loss of primary steering. Formal underway familiarization must be conducted under the mentorship of a skilled, appropriately certified master or engineer as applicable to the individual system.

2.1.11 Verification Plan

The Contractor must prepare and deliver a Compliance Verification Matrix in accordance with CDRL-CM-001 and DID-CM-001 Compliance Verification Matrix for Canada's review and acceptance.

The Contractor must demonstrate that all requirements contained in the SRD of Annex A and this SOW are met by the design of the NLT as well as the actual NLTs themselves.

2.2 042 General Administrative Requirements

2.2.1 Contract Meeting

2.2.1.1 General

The Contractor must schedule a Kick-off Meeting, Monthly Progress Review Meetings, Technical Progress Review Meetings and any other meetings that may occur in consultation with, and as agreed with, Canada.

The Contractor must develop and deliver meeting agendas for all meetings specified in this SOW.

The Contractor must record the minutes of all meetings required under this SOW summarizing the discussions and decisions reached. The minutes must be forwarded to Canada for approval.

Action items identified during meetings must be included in the Action Item List and managed accordingly.

The Contractor must provide the facilities, materials and services required for the conduct of all meetings. The cost for all facilities, materials and services must be borne by the Contractor.

All meetings must be held at the Contractor's premises, unless otherwise agreed to beforehand. Canada will chair all meetings unless otherwise specified below or as agreed by Canada.

Urgent matters arising outside of normally scheduled meetings and requiring the immediate attention of Canada must be raised to the TA and Contract Authority (CA) by the Contractor in a reasonable and timely manner.

2.2.1.2 Contract Kick-off Meeting

The Contractor must conduct a Contract Kick-off Meeting, in accordance with CDRL-M-007 and DID-M-007 Kick-off Meeting

2.2.1.3 Monthly Progress Reports

The Contractor must monitor progress and provide project status reports in accordance with CDRL-M-008 and DID-M-008 Monthly Progress Report.

2.2.1.4 Technical Progress Review Meeting (TPRM)

The Contractor must coordinate, convene, and conduct TPRMs with Canada as required and at least monthly to discuss and resolve any issues with the design, system engineering, construction, Integrated Logistic Support (ILS) and any other technical issues that affect the progress of the Work. Meetings may be via teleconference or other means reasonably agreed by Canada. The TPRM may also be used as a venue to progress Work in which Canada's participation is required.

The Contractor must conduct TPRMs in accordance with CDRL-M-009 and DID-M-009 Technical Progress Review Meeting.

2.2.1.5 Monthly Progress Review Meeting (MPRM)

The Contractor must coordinate, convene, and conduct MPRMs in accordance with CDRL-M-010 and DID-M-010 Monthly Progress Review Meeting to discuss cost, schedule, progress, risks, issues and any other topics that affect the conduct of the Work. Meetings may be via teleconference or other means reasonably agreed by Canada. MPRMs must encompass total project status as of the review date.

MPRMs may be held in conjunction with the TPRM or other schedule meetings, if possible.

2.2.1.6 Other Scheduled Meetings

The Contractor may identify through other requirements stipulated in this SOW, and the submission of his various plans, the necessity to schedule other meetings. The Contractor must identify these meetings in the Master Plan and Schedule. Canada's approval of the Master Plan and Schedule will confirm Canada's intention to attend such meetings.

2.2.1.7 Unscheduled Meetings

Upon the request of Canada or the Contractor, the Contractor must arrange meetings to discuss the status of the particular issues with the Contract or Work. The Contractor must ensure that Canada has copies of all material necessary for any such meetings as far in advance as possible. The intent of these meetings is to allow Canada, the Contractor, and the OEM and/or Vendor to discuss any issues or change proposals that arise with regards to the arrangement and/or equipment. These meetings will also provide a forum to discuss the progress of the NLT construction and installation. These meetings may be conducted via teleconference and may be scheduled to coincide with the TRM and/or PRM. The Contractor must ensure that the OEM and/or Vendor is represented when appropriate.

2.2.1.8 Meeting Arrangements

When the Contractor is tasked to arrange and coordinate a meeting, it must be done in accordance with this section.

The Contractor must prepare and submit supporting documents required, in source format, for a meeting at least five (5) working days in advance of each scheduled review or meeting.

In the case of unscheduled meetings in which case the Contractor must submit supporting documents no less than 24 hours prior to the meeting.

The Contractor must prepare and submit an agenda at least five (5) working days in advance of each scheduled review or meeting.

In the case of unscheduled meetings the Contractor must submit an agenda no less than 24 hours prior to the meeting.

Canada and the Contractor must mutually agree to the contents of the agenda.

Canada will inform the Contractor the number of attendees for the meeting representing Canada within one (1) business day of receipt of agenda, if possible.

2.2.1.9 Meeting Support

The Contractor must host and attend project reviews and meetings as required by this SOW, at the Contractor's facility, via teleconference or elsewhere as agreed to by Canada.

For all reviews and meetings hosted by the Contractor, the Contractor must;

- Arrange the venue, including parking as appropriate;
- Co-ordinate with Canada as appropriate;
- Provide all administrative facilities and presentation equipment;
- Ensure that qualified Contractor and subcontractor personnel attend the reviews or meetings as required for the purpose of the review or meeting;
- Ensure and report that action items and decisions under the control of the Contractor as a result of the various meetings and reviews are implemented where applicable; and
- Maintain and provide to Canada files, records, documents of all reviews and meetings.

2.2.1.10 Meeting Cancellations

Rescheduling of meetings must be done only through mutual consent between Canada and the Contractor.

2.2.1.11 Action Item List (AIL)

The Contractor must maintain a historical, chronological and up-to-date list of action items resulting from reviews, meetings, and correspondence between Canada and the Contractor in accordance with CDRL-M-011 and DID-M-011 Action Item List (AIL) for the duration of the project.

2.2.1.12 Meeting Minutes

The Contractor must record, produce, deliver and revise, as required, minutes for all meetings. The Contractor must prepare and distribute, within five (5) working days an electronic copy of the minutes to Canada's attendees in accordance with CDRL-M-007 Kick-off Meeting, CDRL-M-009 Technical Progress Review Meeting, and CDRL-M-010 Monthly Progress Review Meeting. Meeting minutes are accepted once signed by the CA and TA. Canada will advise the Contractor of any issues within five (5) working days of receiving the minutes at which point the Contractor will be responsible for revision and resubmission within two (2) working days.

2.2.2 Access to Facilities

Canada, and any of its authorized agents and class Surveyors must be granted access to the Contractors facilities, on a non-interference basis, for the purpose of verifying any of the deliverables during the completion of the Work.

Authorized representatives of Canada must have access to any site where any part of the work is being carried out at any time during working hours to make examinations and such tests of the work as they may deem fit.

Canada will confirm two (2) to three (3) business days prior to arriving.

The Contractor must provide an office area furnished office space for the exclusive use of Canada's personnel co-located with the Contractor's facilities.

The Contractor must ensure the office area is securable with three (3) sets of keys provided to Canada.

The Contractor must ensure the office area contains:

- Two (2) desks with a chair each;
- One (1) legal size lockable filing cabinet with four (4) drawers;
- Waste/Recycling container(s) (1 per desk);
- Telephone(s) and telephone line(s) (1 per desk);
- Coat rack(s) or pole(s) sufficient to accommodate outer clothing for a minimum of three (3) people;
- One (1) laser printer with scan and photocopy capability, to be supplied and fitted by the Contractor;

The Contractor must arrange for two (2) high speed internet connections, either wired or secure wireless for Canada supplied computers.

The Contractor must ensure the office area is supplied with ventilation, heating, air-conditioning, electric power, and lighting.

The Contractor must ensure the office area includes access to the Contractors washrooms facilities.

The Contractor must institute a system of security management to ensure security of Canada's materiel on the Contractors facility in accordance with the National Defence Security Orders and Directives.

The Contractor must provide two (2) parking spaces within the confines of the Contractor's facility for Canada's personnel.

2.2.3 Contractual Issue Reporting

The Contractor must advise the CA by email within three (3) working days of the date the Contractor determines that there is a schedule alteration or contractual issue.

Upon such notification Canada will advise whether an unscheduled meeting or other action is required.

2.2.4 Documentation Deliverables

Unless otherwise specified in individual DID's the Contractor must deliver electronic copies of all deliverables required as part of the Contract in the native format of the following software as appropriate for the nature of the deliverable:

- Microsoft Office Suite 2013 including Word, Excel, Project Professional, and PowerPoint;
- AutoDesk AutoCAD 2015; and

- Adobe Portable Document Format (searchable).

The Contractor must obtain the permission from Canada before delivering electronic copies in any other file formats.

The Contractor must deliver all electronic copies of deliverables in the fully readable and editable native software format unless the deliverable file cannot be provided in the native format (e.g., third party user manual where the native format is unavailable).

All material produced specifically for the Contract must be provided in native electronic format.

The Contractor must submit all deliverable data in draft form for Canada's review or review and acceptance in accordance with the applicable CDRL.

The Contractor must ensure that the draft document consists of a complete document compliant with the requirements of this SOW and the applicable CDRL line and DID.

Canada's review process will take no more than (10) working days from receipt of the data.

The provision of comments by Canada on draft deliverables must not be construed as acceptance of the data deliverable.

Unless otherwise noted, the Contractor must address Canada's comments and resubmit the document showing a new revision number, within 10 working days of reaching agreement on the comments.

The Contractor must ensure that final documents consist of the draft document modified to include changes as authorized by Canada.

Once Canada has confirmed the changes, the data deliverable will be accepted by Canada in writing.

2.2.4.1 Contract Data Requirements List

The CDRL details the totality of the data deliverables and their applicable schedule for submission and re-submission/update, which must be delivered in addition to the NLTs.

The CDRL for the NLT is contained in Appendix A to this SOW.

2.2.4.2 Data Item Descriptions

The details of format and content for each data deliverable are captured in each specific DID.

DIDs define the individual deliverables that the Contractor must provide to Canada at the time(s) and period(s) specified in the CDRL in order to satisfy the Contract. DIDs include: the format, process, delivery schedule and level of detail required to satisfy the requirements of the individual deliverable they refer to. The DIDs for the data deliverables are contained in Appendix B to this SOW.

2.2.5 Design Reviews

2.2.5.1 General

The Contractor must perform the required engineering, calculations and design work to make any changes required to the proposed NLT design to meet the requirements of Canada as specified in the SRD in Annex A.

The Contractor must track requirements and accepted design changes. The Contractor must provide to Canada, evidence of how the requirements in the technical baseline and subsequently accepted design changes modify the proven parent tug design in order to meet the SRD in Annex A.

The Contractor must conduct design reviews with Canada to ensure that any design changes required to meet the SRD in Annex A are reviewed and accepted by Canada.

The Contractor must prepare for and conduct two (2) design reviews;

- Preliminary Design Review (PDR); and
- Critical Design Review (CDR).

2.2.5.2 Preliminary Design Review (PDR)

Following Contract Award and prior to the commencement of the Preliminary Design Phase, the Technical Authority, Inspection Authority and selected representatives of Canada will, at their discretion, inspect the proposed "Proven Parent" vessel and verify that there are no discrepancies between the vessel and the information provided in the proposed documentation. This inspection is intended to allow Canada to quantify the risk associated with the proposed design.

During the Preliminary Design Phase, the Contractor must carry out the necessary preliminary design and engineering work in order to demonstrate that the NLT design will meet the requirements of Canada as set out in the SRD of Annex A.

During the Preliminary Design Phase, the Contractor must examine every aspect of the design, construction and outfitting of the NLT as presented in the SRD of Annex A and SOW as they relate to the proven parent design.

The Contractor must bring to the attention of Canada all problems, omissions or inconsistencies between the SRD of Annex A requirements and the proven parent tug design.

The Contractor must then submit to Canada recommended procedures and changes in order to correct the aforementioned problems, omissions or inconsistencies.

On completion of the Preliminary Design Phase, the Contractor must conduct a formal Preliminary Design Review (PDR) with Canada to confirm that the design will satisfy all SRD of Annex A requirements. During the PDR the Contractor must demonstrate that the design is feasible as a starting point for continuing into the detailed design.

The PDR should be conducted in series on a system-by-system basis.

The PDR must be conducted prior to submitting plans and data to Classification Society and the Regulatory Bodies.

The PDR may be scheduled to coincide with a MPRM/TPRM.

The Contractor must deliver the PDR deliverables in accordance with CDRL-E-006 and DID-E-006 Preliminary Design Review Data Package for Canada's review and acceptance.

Prior to continuing to the detailed design phase, all exit criteria for the PDR must be met and accepted by Canada.

The Compliance Verification Matrix in accordance with CDRL-CM-001 and DID-CM-001 Compliance Verification Matrix must be completed by the Contractor and submitted to Canada for review and acceptance. The Contractor must provide written confirmation to Canada of the completion of the PDR in accordance with the RFP, Preliminary Design Review/Critical Design Review.

2.2.5.3 Critical Design Review (CDR)

During the detailed design phase, the Contractor must carry out the necessary detailed design and engineering work necessary to support construction of the NLT in order to create and deliver, to Canada,

a baseline NLT design that collates all of the engineering information and changes generated during the Work.

On completion of the detailed design phase, the Contractor must conduct a Critical Design Review (CDR) with Canada prior to the start of the vessel's construction.

The Contractor must commence the CDR with Canada only after receiving formal approval of the baseline NLT design from Classification Society and Regulatory Bodies.

The CDR must be conducted in series on a system-by-system basis.

The CDR may be scheduled to coincide with a PRM/TPRM.

The Contractor must deliver the CDR deliverables in accordance with CDRL-E-007 and DID-E-007 Critical Design Review Data Package for Canada's review.

Prior to continuing to the critical design phase, all exit criteria for the CDR must be met and accepted by Canada.

The Contractor must establish the allocated baseline of the NLT design for production upon completion and Canada's acceptance of the CDR.

The Compliance Verification Matrix in accordance with CDRL-CM-001 and DID-CM-001 Compliance Verification Matrix must be completed by the Contractor and submitted to Canada for review and acceptance. The Contractor must provide written confirmation to Canada of the completion of the CDR in accordance with the RFP, Preliminary Design Review/Critical Design Review.

2.2.5.4 Acceptance Review (AR)

An Acceptance Review (AR) Meeting must be conducted for each NLT. The objective of the Acceptance Review Meeting is for the Contractor to present evidence to Canada that all data deliverables and Contractual requirements for a particular NLT have been fully satisfied.

With the exception of delivery of the NLT itself to Canada, data deliverables for AR includes all parts of the Test and Trials, Technical Data Package (TDP) and all other deliverables identified as required for Delivery with the respective NLT. All Tests and Trials, training, inspections and corrective actions of identified deficiencies, for the respective NLT, must be completed and delivered prior to the Contractor conducting the Acceptance Review for the respective platform.

The Contractor must deliver the AR deliverables in accordance with CDRL-E-010 and DID-E-010 Acceptance Review Data Package for Canada's review.

As part of the AR, the Compliance Verification Matrix in accordance with CDRL-CM-001 and DID-CM-001 Compliance Verification Matrix must be completed by the Contractor and submitted to Canada for review and acceptance.

2.2.6 Language

The Contractor must produce all documentation consistently in one of the two Official Languages of Canada.

The Contractor must provide written authorization for Canada to translate any documentation produced by the Contractor to the other Official Language of Canada if that documentation is not provided in both Official Languages.

To support training purposes, Canada may require certain supplier documentation in both Official Languages. Commercial publications and documentation such as operating manuals supplied by third

party for commercial-off-the-shelf items must be provided to Canada in both Official Languages if commercially available at time of vessel delivery.

If bilingual documentation is not provided from the supplier or OEM, the Contractor must obtain a written authorization from the supplier or OEM in question to grant Canada the rights to translate into the other official language.

2.3 045 Care of Ship during Construction

2.3.1 General

The Contractor must ensure that, during the entire period the NLTs are in the Contractor's possession, all parts of the NLTs be maintained in an undamaged condition.

The Contractor must take all necessary actions to prevent wear and damage incidents during construction. The Contractor must prevent corrosion or other environmental deterioration of the NLT until Delivery.

The Contractor must ensure that all piping, machinery, and equipment subject to freezing be kept drained, or the respective compartments suitable heated, when not in use.

The Contractor must ensure that standing water does not accumulate or rest on the weather decks or any areas inside the NLT.

The Contractor must ensure all equipment is protected against grit and sand blast entering the equipment during construction.

The Contractor must ensure that while the NLTs are in the Contractor's possession, the NLTs and all their equipment and material are safeguarded from all damages including fire or flooding through the implementation of appropriate policies and procedures.

The Contractor must ensure that all equipment, prefabricated parts, furniture, and all other items that are stored in warehouses or on piers during the construction period, are kept clean and protected from the environment and stored in accordance with OEM instructions.

The Contractor must ensure that all items must be thoroughly examined for vermin, and confirmed to be completely free of vermin, before being placed on board.

The Contractor must ensure that all material for NLT construction, including plate, prefabricated parts, shapes, forms, and extrusions are stored in an enclosed covered shelter protected from the elements.

The Contractor must ensure that all equipment including but not limited to propulsion engines, transmissions, ancillaries, electrical and electronic equipment are stored in an enclosed, environmentally protected shelter to protect against damage from the elements.

The Contractor must ensure that temporary covers as recommended by the OEM must be supplied to protect all equipment requiring protection from the weather.

The Contractor must ensure that temporary covers are installed over temporary holes to protect the interior against damage due to weather.

2.3.2 Care of Machinery and Equipment

The Contractor must be responsible for the care of all NLT machinery and equipment in accordance with the OEM's recommendations, whether furnished by the Contractor or Canada.

The Contractor must ensure that all parts, especially those having working surfaces or passages of piping for lubricating oil, fuel oil, or potable water are kept clean and protected during construction, storing and assembly, and after installation.

The Contractor must ensure that all electric and electronic equipment and machinery are at all times protected against dust, moisture, or other foreign matter.

The Contractor must ensure that no NLT equipment is subjected to rapid temperature changes or extremes in temperature.

The Contractor must ensure that, if at any time that machinery or equipment is allowed to deteriorate due to lack of care in storage as indicated above, as determined by the TA, it must be subjected to tests, at Contractor expense, to determine its condition and, if necessary, must be repaired or replaced at Contractor expense.

The Contractor must ensure all preservatives applied by the OEM must be left intact, if possible, until installation of machinery or equipment on the NLT.

If removal of the preservative is necessary for testing the machinery or equipment prior to installation, the Contractor must re-preserve and protect the machinery and equipment until installed.

The Contractor must ensure that all preservatives on working parts are thoroughly removed prior to operation of the machinery or equipment.

The Contractor must ensure that under no circumstances do personnel use engine projections or any other machinery parts as steps.

The Contractor must ensure all damages resulting from failure to observe the preceding precautions are rectified at the Contractor's expense.

The Contractor must ensure that diesel engine fresh water cooling systems are distilled and chemically treated according to the OEM's recommendations prior to engine operations.

2.3.3 Onboard Equipment

The Contractor must ensure the NLTs are entirely finished, equipped, outfitted, with equipment integrated and made ready for service for delivery.

The Contractor must provide stowage facilities for all equipment, outfit, and spare gear in the form of racks, cupboards, and lockers to the satisfaction of the TA.

The Contractor must ensure all material necessary for the safety of the NLT as required by Classification Society and Regulatory Bodies for a NLT of this class is supplied and installed.

The Contractor must install the digital nautical charts requested by the Technical Authority prior to the delivery of each NLT.

2.3.4 Environmental Considerations

The Contractor must manage all activities and materials associated with the Work to meet all applicable Federal, Provincial and Municipal environmental legislation and regulations.

The Contractor must put in place the necessary precautions and/or systems to mitigate the potential environmental impacts associated with Work during the construction, tests and trials, and delivery of the NLTs.

The contractor must, at any time throughout the Work, upon the request of Canada, provide to Canada a copy of their environmental protection policy and/or plan as well as any associated documentation to demonstrate compliance.

The Contractor must ensure that any substances identified as Prohibited Materials are not used during the Work.

The Contractor must ensure that asbestos, PCBs, Ozone Depleting Substances (including Halon) and TBT based anti-fouling paints are not used in the completion of the Work.

The Contractor must, to the greatest extent reasonably possible, ensure that materials used to construct the NLTs and the materiel specified to conduct routine maintenance support of the NLTs and its subsystems do not pose environmental, health and/or safety hazards at any point during their life cycle, including repair and disposal.

The Contractor must obtain approval in writing from the CA via the Change Request Form, before including any hazardous material or materiel, as defined in Federal and Provincial legislation and regulations, in the construction or routine maintenance support of the NLTs.

The Contractor must dispose of any hazardous material/waste in accordance with all applicable Federal, Provincial and Municipal legislation and regulations.

3 Other Design Deliverables

3.1 061 Hull Structure

The Contractor must prepare the following design deliverables for Canada's review or review and acceptance in accordance with:

CDRL-E-005 and DID-E-005 Bridge Arrangement; and

CDRL-E-009 and DID-E-009 Structural Adequacy and Vibration Report.

3.2 063 Electric Plant

The Contractor must prepare the following design deliverables for Canada's review or review and acceptance in accordance with:

CDRL-E-003 and DID-E-003 Electrical Load Analysis and Report.

The Contractor must identify cable types and sizes for all electrical and electronic equipment and systems.

3.3 064 Command and Surveillance

The Contractor must prepare the following design deliverables for Canada's review or review and acceptance in accordance with:

CDRL-E-004 and DID-E-004 Antenna Arrangement.

3.4 068 Integration and Engineering

The Contractor must prepare the following design deliverables for Canada's review or review and acceptance in accordance with:

CDRL-E-001 and DID-E-001 Weights and Centers of Gravity Report;

CDRL-E-002 and DID-E-002 Trim, Stability and Freeboard Report; and

CDRL-E-008 and DID-E-008 Acoustic Management Report.

The Contractor must provide for each NLT a "Green Passport", as defined in IMO Resolution A.962(23) as amended, Guidelines on Ship Recycling.

4 070 General Requirements for Design and Construction

4.1 Workmanship

The Contractor must assure that the materials, workmanship and procedures used in the construction of the NLTs and its subsystems must meet the requirements of the Contract, SRD of Annex A, this SOW, Classification Society and Regulatory Bodies.

The Contractor must ensure the quality standards for the construction and outfitting of the NLTs are completed in accordance with the following industry standards:

- IACS Recommendation 47 Shipbuilding and Repair Quality Standard (SARQS);
- ASTM F2016 Standard Practice for Establishing Shipbuilding Quality Requirements for Hull Structure, Outfitting, and Coatings; and
- Contractor's Quality Management Plan.

The Contractor must supply, install, integrate and commission all the equipment specified in the SRD of Annex A and the associated hardware in accordance with the recommendation and guidance of the respective Original Equipment Manufacturer (OEM).

All materials, machinery, and equipment incorporated in the construction of the vessels must be new.

All diesel engines, both for main propulsion and as generator sets shall be selected from approved marine engine models listed by both Classification Society and TCMS Branch.

All surface preparation requirements, pre-treatment and coatings applications shall be per the manufacturer's instructions and shall only be carried out within ranges of temperature and humidity conditions as specified in the manufacturer's instructions.

All anodes shall be protected from the effects of paint spraying during construction.

The Technical Authority reserves the right to request samples of the proposed materials to be furnished for testing purposes.

5 080 Integrated Logistics Support Requirements

5.1 General

Integrated Logistics Support (ILS) is comprised of the activities required to develop and deliver the products required to ensure the support and operation of the NLTs throughout their service life.

Materials, machinery, and equipment used in the tugs shall be selected from models currently in production and are available in North America and which have a proven logistical support chain (sales offices, warehousing spares, and field service representatives) established and operating in Canada.

All deck machinery shall be of proven manufacture for the towing industry with a minimum of 10 such systems in service worldwide.

5.2 081 Maintenance

5.2.1 Preventative Maintenance

The Contractor must perform a maintenance analysis and develop and deliver the Maintenance Analysis Reports in accordance with CDRL-ILS-004 and DID-ILS-004 Maintenance Analysis Reports for Canada's review and acceptance.

5.2.2 Maintenance Procedures

5.3 085 Engineering Drawings

5.3.1 Drawings

The Contractor must prepare and submit to Canada all engineering drawings and associated lists in accordance with CDRL-M-012 and DID-M-012 Design Drawings. Note that this DID defines only the process and format of the engineering drawings and associated lists and other DIDs describe the content that will be required for various deliverables.

The Contractor must provide Canada with digital access to all production drawings for viewing and information purposes. Drawings that must be delivered to Canada for review, acceptance, and/or approval are identified in the respective DIDs.

The Contractor must provide to Canada copies of all stamped and approved drawings submitted to the Classification Society and/or Regulatory Bodies.

5.4 086 Technical Manuals and Other Data

5.4.1 Technical Data Package (TDP)

Technical data is recorded information, regardless of form or characteristics, of scientific or technical nature. Examples of technical data include but not limited to research and engineering data, engineering drawings and associated lists, specifications, calculations, standards, process sheets, manuals, technical reports, catalogue item identification and related information, and documentation related to computer software.

The Contractor must develop and deliver a Technical Data Package that contains all of the Technical Data and Documentation required to operate, maintain, modify, dispose of, and manage the configuration of the NLTs in service in accordance with CDRL-ILS-003 and DID-ILS-003 Technical Data Package for Canada's review and acceptance.

The Contractor is responsible for the correctness of the details of all elements of the TDP.

The TA may conduct verification of operating instructions, troubleshooting and maintenance procedures and spare parts references contained in the publications.

The TDP will be accepted only after Canada is satisfied with the final TDP content and that all identified issues have been addressed.

5.4.2 Maker's List (Master Equipment List)

The Contractor must develop and deliver to Canada a Master Equipment List (MEL) that identifies all the major propulsion plant, electrical plant, auxiliary and deck equipment fitted on the NLTs in accordance with CDRL-ILS-001 and DID-ILS-001 Master Equipment List for Canada's review.

5.4.3 Hazardous Materials Database

The Contractor must control, track and verify the existence of any hazardous materials on the NLTs.

Each controlled product (defined under the Controlled Product Regulations issued under the Hazardous Products Act) used or installed in the vessel must have a label. The label must disclose prescribed information and display on it all applicable hazard symbols.

The Contractor must provide proper labelling at locations to alert the worker to hazardous substances and provide advice relative to precautionary measures needed in accordance with the requirements of Workplace Hazardous Material Information System (WHMIS).

The Contractor must develop and deliver the Hazardous Material Database in accordance with CDRL-ILS-002 and DID-ILS-002 Hazardous Material Database for Canada's review and acceptance.

5.4.4 Recommended Spare Parts List (RSPL)

The Contractor must compile a list of spare parts in accordance with CDRL-ILS-005 and DID-ILS-005 Recommended Spare Parts List for Canada's review and acceptance.

5.4.5 Captain Ship's Book

The Captain's Ships Book contains all legal documents required for the vessel's operation.

The Contractor must prepare and deliver the Captain's Ship Book in accordance with CDRL-ILS-006 and DID-ILS-006 Captain's Ships Book for Canada's review and acceptance.

5.4.6 Certificates

The Contractor must obtain and deliver the NLTs with the certificates listed below and any other certificates required by the Classification Society and Regulatory Bodies in accordance with the SRD of Annex A and this SOW. One (1) original and 2 (two) electronic copies of the following documents, for the proper and safe operation of the vessels, shall be supplied by the Contractor at the time of delivery and prior to Acceptance:

- Certificates of Classification Society for hull;
- Certificates of Classification Society for machinery;

- Ship Safety Equipment Certificate;
- Ship Safety Radio Certificate and licences;
- Ship Safety Construction Certificate;
- Certificate of Registry (includes all certificates relating to measurement and tonnage which are required for registry);
- Builder's Certificate;
- Ship's Radio License;
- Certificates of nautical instruments (per item);
- Certificates for safety equipment (per item);
- Certificates for lifesaving equipment (per item)
- Certificates of fire suppression equipment (per item);
- Certificates of anchors, anchor shackles, and anchor chains (per item);
- Certificate of navigation lights;
- Compass Adjustment Certificate and deviation card;
- Certificates for machinery and deck equipment (per item);
- Certificates for all towing gears, wire ropes, etc.;
- Engine International Air Pollution Prevention (EIAPP) Certificate;
- All Tackle Certificates in the form required by Canadian Coast Guard (as approved by TC);
- Canadian Oil Pollution Prevention Certificate or International Oil Pollution Prevention Certificate (as appropriate).
- Transport Canada Marine Safety Branch Certificate as required by the Class of Boat;
- Test performance certificates for all machinery, equipment and materials such as engine, gearbox, pumps, switchboards, deck machinery, navigation and communications systems;
- Certificates of building material such as anchor chain, joiner bulkhead;
- Certificates for EPIRBs, light and sound signaling equipment, GMDSS equipment and all other SOLAS safety equipment;
- Type Approval Certificates for engine sets (first ship set shall be shop tested as per Specification at Annex "A");
- Original copy of the warranty certificates of all bought-in machinery, equipment and apparatus (valid for twelve (12) months from the date of acceptance of the boat);
- Inclining experiment report and stability information booklet;
- Fire Suppression System; and

- All other certificates as required by regulatory bodies.

5.4.6.1 Registry and Classification

The Contractor will ensure all certificates regarding measurement and tonnage are received and forwarded to the Registrar of Shipping, Transport Canada. The NLTs will be registered with a home port of Ottawa, Canada.

Canada will provide the vessel names, and once all measurement certificates are sent to Transport Canada, will register the vessel with the Registrar of Shipping, and provide the Contractor with the official number or license number for marking purposes.

5.4.6.2 Tonnage

The Contractor will provide for the services of an authorized tonnage measurer to have vessel measured, and mark vessel's gross (GRT) and net (NRT) tonnage to Canada Shipping Act 2001 requirements.

The Contractor will have tonnage measured in accordance with the provisions of TP13430 Standard for the Tonnage Measurement of Tug Boats, Part 2 - Tonnage Measurement of Tug Boats 24 Meters in Length or More. The long form method must be used.

6 090 Quality Assurance Requirements

6.1 General Quality

The Contractor shall be responsible for the overall engineering design, integration, testing and supply of the propulsion and electric plant including transmission, shafting, and machinery control system. The Contractor shall submit calculations and data to the TA that demonstrates that the design and the selected equipment and components will satisfy the intent of the SRD.

Color, patterns and design shall be submitted to the TA for approval.

The quality of all outfit items selected shall be to the approval of the TA.

Design Contractor shall design all ducts appropriate for service, to include: noise requirements, internal pressure, ship motion, duct support arrangements, installed in exposed locations (accidental impact), etc.

6.2 091 Ship Inspection

The Contractor must conduct all activities related to ship inspection in accordance with Annex F Inspection/Quality Assurance/Quality Control.

The Contractor will schedule and coordinate all inspections for appraisals and approvals by the TA, Classification Society, Regulatory Bodies, and any other necessary organizations with Canada. All required inspections must be integrated into the Contractor's build schedule.

The Contractor is responsible to resolve any problems, deficiencies or defects identified during the inspections or as raised by any of the above authorities.

As part of the inspection of the vessel(s), the Contractor is responsible to ensure that the vessel is built in accordance with the technical baseline and must confirm, through a physical configuration audit that the as-built configuration reflects the technical baseline. The TA will be present for all configuration audit inspections.

The Contractor shall ensure that Canada is present for inspection before and during installation of main propulsion engines, shaftlines, rudders and propulsors as applicable.

Inspections must also be conducted after surface preparations, before any surface coatings are applied. All preparations and each coat of paint must be checked and recorded by a NACE CIP (National Association of Corrosion Engineers – Coating Inspection Program) certified Level II inspector. Coatings must be inspected prior to being covered by linings or insulation. Welding must be inspected in accordance with the SRD of Annex A and Classification Society requirements. Pipe spools and runs must be inspected during and after flushing. Cabling runs, connections and terminations must be inspected once completed.

6.3 092 Ship Test

The Contractor must conduct all activities related to test and trials in accordance with Annex F Inspection/Quality Assurance/Quality Control.

The Contractor must conduct all test and trials as identified in the Test and Trials Plan.

The Contractor must develop and deliver to Canada a Test and Trials Report for all test and trials performed including, but not limited to, Factory Acceptance Tests, Builder's Dock Trials, Harbor Acceptance Trials and Sea Trials.

6.3.1 Test and Trials Conduct

The Contractor must complete miscellaneous inspections prior to the NLT Test and Trials to verify all of the requirements of the NLT, including, but not limited to:

- Workmanship;
- Furnishing, Insulation and other work;
- Stowages;
- Painting; and
- Cathodic Protection.

The Contractor must also ensure that the OEM's representatives are in attendance for all equipment tests and trials as required.

The Contractor must also ensure that the OEM's representatives make all final checks and adjustments prior to test and trial as required.

The Contractor must ensure that any identified component defects and or deficiencies are corrected prior to any tests and trials of the respective component.

An inspection, test and trial program, set up by the Contractor and approved by the DND Project Manager, shall demonstrate the ability of the vessels, their systems and equipment to meet the contracted performance specification.

The Contractor must ensure all required inspections and tests on individual components are completed to the satisfaction of Classification Society and the TA and IA prior to the commencement of any tests and trials on the respective component.

All tests must be completed on individual components of the systems, and all defects corrected to the satisfaction of the TA prior to the commencement of any trial on that system.

The Contractor must ensure all tests and trials are witnessed by the TA and IA.

The Contractor must ensure all tests and trials which are subject to Classification Society are witnessed by Classification Society.

The Contractor must visually inspect all components for quality of workmanship and the intrinsic safety of equipment operation or testing apparatus prior to each test or trial.

The Contractor must ensure all tests and trials which are subject to Regulatory Bodies are witnessed by Regulatory Bodies or Classification Society on their behalf as applicable.

The Contractor must ensure that during the conduct of all tests and trials, no alignment or adjustment is permitted unless specifically required in the test and trials procedures.

The Contractor must ensure all required inspection, tests and trials are conducted in the presence of, and to the satisfaction of the Regulatory Body Surveyors or Classification Society on their behalf.

All damages occurring to components or systems during or after any testing and prior to delivery of the NLT must be repaired and the previously completed tests or trials of the component or system must be retested and witnessed and accepted by all applicable inspectors.

Before starting up all major propulsion equipment, a thorough inspection is to be performed, in the presence of the authorized representative of the OEM, to establish cleanliness, tightness and correctness of connections, proper lubrication and fuel supply.

The Contractor must test the anchor windlass under normal working conditions to demonstrate satisfactory operation for braking, clutch functioning, power lowering, hoisting, and proper riding of the chain through the hawse pipe, over the wildcat, through the chain pipe, and stowing in the chain locker.

The Contractor must conduct a noise survey on the first of class vessel in accordance with the procedure outlined in TP 3685. The Contractor must address and rectify any deviations in excess of prescribed limits from TP 3685.

The Contractor must conduct a Radio Frequency (RF) Survey on the first of class vessel with all electromagnetic emitters transmitting. The Contractor must conduct the RF survey in accordance with Health Canada "Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6."

The Contractor must perform Exhaust Emission Measurements during Factory Acceptance Test and sea trials for each NLT.

The Contractor must conduct tests on the Navigation Lighting System to confirm that the arcs of visibility of the installed lights meet the requirements of the Canadian Collision Regulations- C.R.C., c. 1416.

The Contractor must demonstrate the efficiency of the oily water separator as installed in accordance with testing requirements of either the US Environmental Protection Agency (EPA) Method 1664 or IMO MEPC 107(49), whichever specifies the more stringent requirement and is in effect at the time of Contract.

The Contractor must conduct tests to determine the Bollard Pull capacity of the NLT is the ahead, astern, and abeam directions.

On completion of all trials, the Contractor must transcribe all test and trials data recorded into a report, containing all relevant data and conclusions gathered during the test and trials program.

The Test and Trials Report must identify any changes to the test or trial conditions or procedures from those described in the Trial Agenda, especially any factors which could have influenced the conduct or results of the test or trial.

The Test and Trials Report must provide a purpose for the test or trial, along with the specification requirement/reference it pertains to, provide a scanned copy of all Record Sheets, a summary of the test or trial outcome, identify by name and position, all personnel involved in the conduct, supervision and witnessing of the test or trial, identify any problems encountered during the test or trial and the actions taken, and provide details for any missed steps, defects or deficiencies discovered during the conduct of the test or trial, along with the actions the Contractor proposes to rectify those deficiencies.

The Contractor must ensure that the original trials data sheets are signed and dated by Classification Society, the TA and the Contractor.

Upon completion of the test and trials program, the Contractor must provide to Canada one (1) Trials Data Booklet containing the original, signed trials data sheets. The Contractor must provide to Canada two (2) copies of the Trials Data Booklet with each NLT.

6.4 094 Regular Ship Trials

6.4.1 Dock Trials

Dock trials must be conducted upon completion of all installation procedures, and verification of such installation to the satisfaction of the TA, IA and CA, and, if required, by Classification Society, Regulatory Bodies or other regulations.

Dock trials must be conducted to verify the proper functioning of all items of each NLTs equipment, machinery and systems for which it would be necessary, prudent or advantageous to perform whilst docked prior to sea trials.

The Contractor must select a period for a dock trial of main engines and all auxiliary services during which no other work is to be carried out in the machinery space. During the Dock Trial of the propulsion system, the Contractor must verify proper operation and ensure that it conforms to the OEM's specification.

The Contractor's Dock Trials must include those tests and trials necessary to ensure that the vessel is safe and seaworthy in all respects. The Contractor must demonstrate proper operation and function of all systems and components of each NLT to the satisfaction of Classification Society and the TA and IA prior to the start of any sea trials.

The Dock Trials must include, but not be limited to, the satisfactory operation of the following:

- Propulsion Controls;
- Starting System;
- Electronics;
- HVAC;
- Windshield Wiper/Washers;
- Shore Power Utilisation;
- Navigational Lights;
- Mooring Fittings;
- Fire Detection and Alarm System;
- Anchor Windlass and Associated Equipment;
- Emergency Engine Shut-Offs;
- Gauges and Alarms;
- Lighting;
- Towline Reel;
- Manual Steering;
- Bilge Pumps;
- Piping Systems;
- Electronic Plant; and

6.4.2 Sea Trials

Sea trials must be conducted when each NLT is considered ready for sea trials by the TA, IA, CA, Classification Society and Transport Canada Marine Safety (as represented under DSIP by Classification Society).

Sea trials must demonstrate to Canada that each NLT, in all respects, meets the operational performance standards as specified in the Contract and is ready for acceptance by Canada for entry into service.

Sea trials must be undertaken only upon satisfactory completion of all dock trials and rectification of all deficiencies arising from these previous trials.

Before proceeding on Sea Trials, the Contractor must ensure each NLT is swung and compass adjusted by a certified compass adjuster acceptable to Canada. The Contractor must provide completed deviation cards must be supplied to Canada at the completion of sea trials.

At the conclusion of successful sea trials, an inspection of the NLT will be made by the TA and IA. The Contractor must rectify all defects and deficiencies noted together with all defects arising during the sea trials.

If the Contractor completes the sea trials but fails some of the individual requirements of sea trials, the Contractor must correct the deficiency, reschedule the failed test or trial, and redo those portions of the test or trial that failed.

6.5 097 Inclining Experiment and Trim Dive

The Contractor must conduct an inclining experiment in accordance with C-03-001-024/MS-003, Procedures for Conducting Inclining Experiments on Canadian Forces Surface Ships, 15 July 1997.

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The Contractor must use the results from the inclining experiment and derive the NLT Lightship in accordance to the requirements of C-03-001-024/MS-003, Canadian Forces Technical Order, Procedures for Conducting Inclining Experiments on Canadian Forces Surface Ships, 15 July 1997.

The inclining weights, equipment for observations, cribbing and other material required for the experiment must be furnished by the Contractor. The Contractor must provide all labour necessary for preparing the NLT for inclining, for installing apparatus, for taking measurements and observations, and for handling lines and shifting inclining weights during the experiment.

The inclining experiment must include measurements to determine the "as inclined" natural roll period.

The Inclining Experiment Report must include the description of the test, inclining experiment calculations, and a summary of the weight conditions. The report must include the calculations of Full Load condition, Minimum Operating condition, Lightship condition, Full Load at End of Service Life, and worst operating with ice accretion (as defined in TP 7301, STAB 7, section 5. [iii] [b]) conditions. The roll period constant must be calculated for each condition.

The inclining Test report must include measurements of appendage draft from the calculated Full Load (End of Service Life) condition waterline to the bottom of the lowest point in the same vertical plane. The specific gravity of water in which the NLT floats must be measured, and this information must be used to calculate the NLT's true displacement.

The lightship check must be conducted in the same way as the inclining experiment with the exception of all aspects related to the NLT's Vertical Centre of Gravity (VCG).

The worst operating with ice accretion condition from TP7301, STAB 7 must be assessed. All operating conditions must be assessed in both salt and fresh water. The stability criteria to be achieved must be as given in TP 7301, STAB 6, and STAB 7 for ice accretion conditions.

6.6 099 Photographs

The Contractor must deliver to Canada, on completion of the first NLT, one set of digital color photographs of all interior and exterior spaces, in accordance with CDRL-M-014 and DID-M-014 Digital Photographs. The photographs must show comprehensive general views of the arrangement of machinery, equipment, appliances, furniture, fittings, instruments, outfit and equipment within the spaces or on the exterior decks.

The Contractor must deliver to Canada, within three weeks of acceptance of each NLT, one set of digital photographs of the NLT, taken after completion, in accordance with CDRL-M-014 and DID-M-014 Digital Photographs.

The photographs must include individual photographs of the following views:

- Close-up of the NLT at sea in motion;
- NLT moving on an angle towards the left-hand side of the photo;
- NLT moving on an angle towards the right-hand side of the photo;
- Side view profiles, both port and starboard;
- View dead ahead; and
- View dead astern.

6.7 811 Configuration Management

The Contractor must maintain and control the configuration of all engineering drawings and associated lists throughout the project and until the end of warranty period for the last NLT.

Once Canada has confirmed the changes, the data deliverable will be accepted by Canada in writing.

When revisions and amendments have been made to data deliverables required under this SOW, the Contractor must submit the revisions/amendments to Canada for review or review and acceptance as indicated in the CDRL for that deliverable.

The allocated baseline NLT design must be subject to configuration management control. No departure from the allocated baseline Technical Data is permissible without specific written approval by Canada via the Change Request Form.

6.8 858 Personnel and Training

The Contractor must provide NLT crews reasonable access to the vessel, on a non-interference basis, for familiarization with the general arrangement and condition of the vessel during construction with approval by Canada.

The Contractor must include provision for NLT crews participate as observers during inspections, tests and trials with approval by the TA and IA.

The Contractor must ensure that access to the NLT is granted during the training period for the purpose of NLT and equipment familiarization and that any equipment or system on which training is provided is in a state of functionality that allows practical demonstration to occur.

6.9 983 Delivery

6.9.1 General

The delivery of the NLTs will include the NLTs themselves, various data deliverables (i.e., reports, user manuals, etc.) developed throughout the project, spare parts for two (2) years operations and initial cadre training as defined in the SOW.

6.9.2 Delivery and Acceptance

The NLTs must be delivered, at the Contractor's cost, 2 each, to CFB Esquimalt, British Columbia and CFB Halifax, Nova Scotia.

On completion of all trials, a general survey must be made of each NLT, and all defects that may have developed, or all work found to be incomplete or unsatisfactory must be corrected by the Contractor subject to the terms of the Contract.

Prior to the acceptance of each vessel and after the completion of all tests and trials the Contractor must:

- Rectify all defects to an as-new condition;
- Clean the NLT internally and externally to an as-new condition, machinery and components touched up as required, pipes painted, and all compartments generally brought to as-new condition;
- Fill diesel fuel oil tanks to minimal capacity as required;
- Ensure the magnetic compass is readjusted after sea trials and before the delivery of each NLT and required certificates and deviation cards are to be handed over to Canada;
- Ensure piping and castings are cleaned of sand, scale, metallic chips, turnings and other foreign matter;
- Ensure all piping systems are flushed and blown clean after installation to remove foreign matter, welding spatter, pipe scale and dirt;
- Fill lube oil and hydraulic oil storage tanks and potable water tanks to 100%;
- Fill all machinery system tanks (e.g. hydraulic, fresh water, header and expansion) to their normal operating levels;
- Ensure all machinery sumps and gear boxes are filled to their OEM recommended operating levels;
- Ensure black and grey water tank is emptied and flushed;
- Ensure all hydraulic, potable water and fuel lines shall be flushed clean of all contaminants prior to the systems they feed being activated;
- Ensure all refrigerants and air conditioning systems are charged to their OEM recommended operating levels;
- Ensure all bilges are clean, empty and dry; and

- Once each compartment, tank, equipment, machinery and/or system has been fully outfitted, inspect it in conjunction with the TA, IA, secure it and when accepted by Canada, turn the keys over to the TA.

6.9.3 Technical Data Package Delivery

6.9.4 Spares Delivery

Upon delivery of each NLT, the Contractor must supply to Canada the onboard spares, repair parts, tools and other materiel specified in the final and approved Recommended Spares and Parts List to support the delivered NLT for a period of 2 years from delivery.

Spares that are not carried onboard the NLTs at time of delivery must be delivered to the destination stipulated in the Contract for the NLT in question.

Upon delivery of the first NLT, to each coast, the Contractor must supply the long lead spares for shore based stock to the respective coast.

All spares and repair parts supplied by the Contractor must be packaged and clearly marked and identified with manufacturer's name, item name and description, and part number on the packaging. Spare parts required for specific equipment or assemblies must be kitted, separately packaged, and identified accordingly.

The Contractor must properly preserve and package the parts for long-term storage by ensuring they are coated with an approved preservative and sealed in an approved wrapping or packaging as determined by the OEM.

Suitable boxes may be used to package an item in accordance with standard commercial practice. If a box is used, each one must contain a non-fading content list that must be protected against damage and staining. Spare parts weighing in excess of 20 kg must be packed in strong boxes with lifting handles and the total loaded weight clearly marked in Kilograms (Kg) on the box.

In determining packaging the Contractor must take into consideration the nature of the item, known logistics requirements, and quantity. The selection of packaging materials must include consideration of disposability, reuse, recycling, and conservation.

The Contractor must provide reusable packaging containers for Contractor supplied spares and materiel that will be routinely returned to third party facilities for rebuilding or servicing.

The Contractor must package and mark hazardous materials in accordance with applicable Federal, Provincial and international regulations.

The Contractor must determine the quantity for each unit package for all materiel based upon the nature of the item, known logistics requirements, and normal usage factors.

The Contractor must provide packaging that is designed to withstand normal logistics conditions and is of quality to ensure the protection and preservation for the safe delivery of the item to its destination. In this case, safe delivery is deemed to mean no damage to the contents of the package.

Packing lists that accompany shipments to identify contents must also identify Contract or purchase order numbers.

6.10 996 Launching

6.10.1 Acceptance Events

Canada must be permitted to organize and hold a launch or acceptance event, as desired, at the shipyard facility, adjacent to the NLTs, to coincide with launch or acceptance of any or all of the NLTs.

Canada has no specific requirements for any ceremonies or events in addition to those that the Contractor may hold for their own purposes, however the Contractor should allow for one ceremony early in the work schedule for the purposes of Canada.

The Contractor must notify Canada of any planned ceremonies or events that concern any of the work for this contract and provide Canada with the opportunity to have up to 20 guests attend each planned ceremony or event. Examples of such ceremonies or event include first steel cutting, 'keel' laying, and launching.

The Contractor must inform Canada of any planned ceremony or event as early as is reasonable to allow Canada to coordinate attendance. If the Contractor wishes to have Senior Executives (e.g. Deputy Minister level or higher) from Canada attend any ceremony or event, then Canada must receive notice of the planned date at least 90 days in advance of the ceremony or event.

Appendix A – Contract Data Requirements List (CDRL)

CDRL No.	DID No.	Title	Purpose	Accept / Review	Initial Submission	Subsequent Submission	Frequency	Remarks
Project Management								
CDRL-M-001	DID-M-001	Project Management Plan	To define how the Contractor will manage the design and construction of the Naval Large Tugs.	B,A	Bid Proposal	1 MACA	As Required	The initial submission will be used for Bid Evaluation purposes. Subsequent submissions are subject to review and approval by Canada.
CDRL-M-002	DID-M-002	Master Plan and Schedule	To define how the Contractor will schedule the work associated with the design, construction and delivery of the Naval Large Tugs.	B,R	Bid Proposal	1 MACA	Monthly	The initial submission will be reviewed as part of the for Bid Evaluation purposes. Subsequent submissions to be presented, updated, and discussed, as required, at Monthly Progress Review Meetings.
CDRL-M-003	DID-M-003	Quality Plans	To define how the Contractor will control the Quality of the various major work processes and where there will be opportune points to witness key Quality Program process points on either an occasional or continuing bases as part of the Quality Program verification activities.	B,R	Bid Proposal	1 MACA	As Required	The initial submission will be used for Bid Evaluation purposes. Subsequent submissions are subject to review by Canada.
CDRL-M-004	DID-M-004	Risk Management Plan	To define how the Contractor plans to identify and record technical risks.	A	2 MACA	Monthly	As Required	The Risk Management Plan is to be a onetime deliverable. The Risk Register, which results from the Plan, is to be presented monthly at the Progress Review Meetings.
CDRL-M-005	DID-M-005	Technical Data Management Plan	To define how the Contractor plans to track and manage the configuration of technical and other data produced during the Naval Large Tug's design and construction process.	A	1 MACA	As Required		Update as Required.
CDRL-M-006	DID-M-006	Change Request Form	To define the content of the form that the Contractor will use to initiate a change request to the Contract.	A	As Required	As Required	As Required	
CDRL-M-007	DID-M-007	Kick-off Meeting	To define how the Contractor must plan to manage the administrative aspects of the Kick-off Meeting.	A	<1 MACA			Agendas to be submitted no later than 1 Calendar Week before the Kick-off Meeting. Minutes to be submitted no later than 1 Calendar Week after the Kick-off Meeting.
CDRL-M-008	DID-M-008	Monthly Progress Report	To define the content of the report that the Contractor must produce on a monthly basis that will present, at a high level, an overview of the status of the project.	A	1 MACA	Monthly	Monthly	Must be delivered no later than 1 week after the end of the reporting period.
CDRL-M-009	DID-M-009	Technical Progress Review Meeting	To define how the Contractor must plan to manage the administrative aspects of the Technical Progress Review Meetings.	A	1 MACA	Monthly	Monthly	Agendas to be submitted no later than 1 Calendar Week before the Technical Progress Review Meeting. Minutes to be submitted no later than 1 Calendar Week after the Technical Progress Review Meeting.

CDRL No.	DID No.	Title	Purpose	Accept / Review	Initial Submission	Subsequent Submission	Frequency	Remarks
CDRL-M-010	DID-M-010	Monthly Progress Review Meeting	To define how the Contractor must plan to manage the administrative aspects of the Monthly Progress Review Meetings.	A	1 MACA	Monthly	Monthly	Agendas to be submitted no later than 1 Calendar Week before the Monthly Progress Review Meeting. Minutes to be submitted no later than 1 Calendar Week after the Monthly Progress Review Meeting.
CDRL-M-011	DID-M-011	Action Items List	To define how the Contractor will track and manage the status of all Action Items arising from meetings.	A/R	First MPRM/TPRM	Monthly	Monthly	To be updated monthly and presented at the MPRM/TPRM
CDRL-M-012	DID-M-012	Design Drawings	To define how the Contractor must develop, present and deliver Design Drawings.	R	As Required by Other DIDs		As Required	This is a template for DID Drawings.
CDRL-M-013	DID-M-013	Build Strategy	To define the construction methodology, construction techniques and shipyard facilities for building the Naval Large Tugs together with any risks the Contractor envisages in implementing this strategy.	R	PDR-15 cd	CDR-15 cd		
CDRL-M-014	DID-M-014	Photographs	To define how the Contractor must develop, present and deliver photographs.	R	As Required by Other DIDs		As Required	This is a template for DID photographs.
Compliance Verification								
CDRL-CM-001	DID-CM-001	Compliance Verification Matrix	To define how the Contractor is going to demonstrate that all aspects of the design comply with the requirements contained in the Systems Requirement Document.	A	PDR-15 cd	CDR and AR-15 cd	As Required	To be delivered for each vessel 15 cd before PDR, CDR and AR.
Engineering								
CDRL-E-001	DID-E-001	Weights and Centres of Gravity Report	To define the content of the report that the Contractor must develop to present the Weight and Centre of Gravity estimates.	A	PDR-15 cd	CDR-15 cd and Delivery		To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package. Must be provide 15 days before delivery for each vessel of the Class.
CDRL-E-002	DID-E-002	Trim, Stability and Freeboard Report	To define the content of the report that the Contractor must produce to demonstrate that the design meets the minimum freeboard, intact and damaged stability requirements.	A	PDR-15 cd	CDR-15 cd and Delivery		To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package. Must be provide 15 days before delivery for each vessel of the Class.
CDRL-E-003	DID-E-003	Electrical Load Analysis and Report	To define the content of the report, and associated drawings, that the Contractor must develop to present the aggregate power demands of all electrical loads on the Naval Large Tug under various operating conditions.	R	PDR-15 cd	CDR-15 cd	As Required	To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.

CDRL No.	DID No.	Title	Purpose	Accept / Review	Initial Submission	Subsequent Submission	Frequency	Remarks
CDRL-E-004	DID-E-004	Antenna Arrangement	To define the details that the Contractor must provide to demonstrate that the proposed Antenna Arrangement will be able to operate without physical or electromagnetic interference.	A	PDR-15 cd		Once	
CDRL-E-005	DID-E-005	Bridge Arrangement	To define the details that the Contractor must provide that will demonstrate that the Bridge Arrangement meets all of the requirements specified in the SRD of Annex A as well as the associated standards.	A	PDR-15 cd	CDR-15 cd	As Required	
CDRL-E-006	DID-E-006	Preliminary Design Review Data Package	To define the content of the data package that the Contractor must develop, deliver and present at the Preliminary Design Review for consideration, discussion, agreement and further development during the Final Design Phase.	R	PDR - 15 cd		Once	
CDRL-E-007	DID-E-007	Critical Design Review Data Package	To define the contents of the data package that the Contractor must develop, deliver and present at the Critical Design Review for consideration, discussion and, agreement before the Production Engineering Package is finalized.	R	CDR - 15 cd		Once	
CDRL-E-008	DID-E-008	Acoustic Management Report	To define the contents of the report that the Contractor must develop to demonstrate that the Naval Large Tugs will meet the noise criteria specified in the Systems Requirement Document.	A	CDR - 15 cd		As required	To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-E-009	DID-E-009	Structural Adequacy and Vibration Report	To define the contents of the report that the Contractor must develop to demonstrate that the structure of the Naval Large Tug's hull and superstructure meets Classification Society Rules, the Systems Requirement Document and is not susceptible to machinery or environmentally induced vibration.	R	CDR - 15 cd		As required	To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-E-010	DID-E-010	Acceptance Review Data Package	To define the contents of the data package that the Contractor must develop, deliver and present at the Acceptance Review for consideration, discussion and agreement for each vessel.	A	AR - 15 cd			To be provided for each vessel for AR - 15 cd.
Test and Trials								

CDRL No.	DID No.	Title	Purpose	Accept / Review	Initial Submission	Subsequent Submission	Frequency	Remarks
CDRL-TT-001	DID-TT-001	Dock Trial Plan and Procedure	To define the plan and procedures that the Contractor intends to follow to prepare and conduct the Dock Trials for the Naval Large Tug and its various equipment's and components.	A	PDR - 15 cd	CDR - 15 cd		Any changes to the Dock Trial Plan and Procedure must be provided no later than six (6) weeks prior to the planned start date of each test or trial. Test and Trials Record Sheet(s) must be appended to each plan and procedure prior to the commencement of the test or trial. Test and Trials Reports to be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-TT-002	DID-TT-002	Sea Acceptance Trials and Procedures	To define the plan and procedures that the Contractor intends to follow to prepare and conduct the Sea Acceptance Trials for the Naval Large Tug and its various equipment's and components.	A	PDR - 15 cd	CDR - 15 cd		Any changes to the Sea Acceptance Trials and Procedures must be provided no later than six (6) weeks prior to the planned start date of each test or trial. Test and Trials Record Sheet(s) must be appended to each plan and procedure prior to the commencement of the test or trial. Test and Trials Reports to be provided (15) days prior to AR for each vessel as part of AR Acceptance Package
CDRL-TT-003	DID-TT-003	Inclining Test Plan and Procedure	To define how the Contractor will conduct the Inclining Experiment and prepare and deliver the results.	A	15 cd before Sea Trials		As required	For First of Class only except if subsequent vessels have a lightship that varies by more than 2% from the First of Class. Inclining Test Report to be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
Integrated Logistics Support								
CDRL-ILS-001	DID-ILS-001	Master Equipment List	To define the list that the Contractor must produce that will identify to Canada the equipment that has been selected in the design and construction of the Naval Large Tugs and which will subsequently be used as an integral part of their in service support.	R	CDR - 15 cd	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.

CDRL No.	DID No.	Title	Purpose	Accept / Review	Initial Submission	Subsequent Submission	Frequency	Remarks
CDRL-ILS-002	DID-ILS-002	Hazardous Material Database	To define the required content of the database that the Contractor must provide that will demonstrate to Canada that the Naval Large Tug complies with the requirements for an Inventory of Hazardous Material.	A	CDR - 15 cd	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-ILS-003	DID-ILS-003	Technical Data Package	To define the package of information (technical data, drawings, manuals and other supporting documentation) that the Contractor must provide to support each Naval Large Tug during its operational life cycle.	A	Manuals 2 Months before delivery of each vessel Drawings 3 Weeks before delivery of each vessel	Updated copies on delivery of first vessel	As required	TDP to be provided (15) days prior to AR for each vessel as part of the Acceptance Review Data Package.
CDRL-ILS-004	DID-ILS-004	Maintenance Analysis Reports	The purpose of this DID is to define the content of the reports that the Contractor must produce to identify critical systems and equipment, establish maintenance cycles, list maintenance activities and related support requirements for the NLT.	A	CDR - 15 cd	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-ILS-005	DID-ILS-005	Recommended Spare Parts List	To define the contents of a list that the Contractor must provide that will establish the recommended spare parts that should be provided with each Naval Large Tug to support its ongoing regular maintenance.	A	CDR - 15 cd	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
CDRL-ILS-006	DID-ILS-006	Captain's Ship's Book	To define the content of a book that the Contractor must provide that contains all legal documents required for each Naval Large Tug's operation.	A	On Delivery of First Vessel	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.
Training								
CDRL-T-001	DID-T-001	Training Plan	To define the plan that the Contractor has developed for the content and conduct of the Crew Familiarization and Operator and Maintenance Personnel Training.	A	CDR - 15 cd	Updated copies on delivery of first vessel		To provide updated copies on delivery for all subsequent vessels. To be provided (15) days prior to AR for each vessel as part of AR Acceptance Package.

Appendix B – Data Item Descriptors (DIDs)

DATA ITEM DESCRIPTION (DID)	
<p>TITLE:</p> <p>DID-M-001 Project Management Plan</p>	<p>DATA ITEM NUMBER:</p> <p>DID-M-001</p>
<p>DESCRIPTION/PURPOSE:</p> <p>The purpose of this DID is to define how the Contractor must manage the design and construction of the Naval Large Tugs.</p>	
<p>RELATED DIDS:</p> <p>DID-M-002 Master Plan and Schedule</p> <p>DID-M-003 Quality Plans</p> <p>DID-M-004 Risk Management Plan</p> <p>DID-M-006 Change Request Form</p> <p>DID-M-013 Build Strategy</p> <p>DID-CM-001 Compliance Verification Matrix</p> <p>DID-M-005 Technical Data Management Plan</p> <p>DID-M-007 Kick-off Meeting</p>	<p>REFERENCES:</p>
<p>PREPARATION INSTRUCTIONS:</p> <p>Format:</p> <p style="padding-left: 40px;">1.0 The Project Management Plan (PMP) must be prepared in the Contractor’s format.</p> <p>Remarks:</p> <p style="padding-left: 40px;">2.0 The Contractor must deliver, implement, and maintain a PMP that must detail the Contractor’s management approach and the processes to be used to address each requirement of the design, construction, outfit, test, trial, certification, and delivery to Canada of the Naval Large Tugs. This PMP must establish the baseline for the measurement of progress and performance by the Contractor. It must be kept current throughout the duration of the Contract to reflect the status of the work.</p>	

3.0 The Project Management Plan must address the following topics as a minimum:

- a. An overview of the Contractor's organization involved in the work including a description to show the reporting relationships, responsibilities, authorities and lines of communication and project control. Résumés of key personnel must be included. The description should detail functions for administration, design and engineering, material procurement, construction, quality management, test and trials, and others as deemed necessary;
- b. An overview of the Human Resources plan and strategy to illustrate how the Contractor will obtain HR capacity with the right education, experience and qualifications to successfully manage and complete the work;
- c. A Communication plan which describes the communications workflow, details of information distribution and performance reporting, identifies team members responsible for various elements of correspondence and reporting including monitoring and controlling, and identifies what information is reported, the method and frequency of communications and reporting submissions;
- d. A description of the design, engineering and drafting capabilities that will be used for the project including resumes of key personnel such as the Chief Draftsperson, Naval Architect and engineering discipline managers;
- e. A description of the Logistics Support capability (spares, publications, drawings, translation) and including resumes of key personnel;
- f. A description of the procedures and operations of the management information system that includes the communication plan, the procedures and operation of data management and configuration management in effect at the Contractor's facility to support the project. The description should include details of the computer system, office software, engineering software, document tracking and records management procedures;
- g. A description of the planning, scheduling and production control systems in effect at the Contractor's facility;
- h. Details of infrastructure including facilities and equipment, building berth / drydock, outfitting quays, cranes, workshops and assembly areas for construction and outfitting, office space, IT tools and software necessary to complete the work; and
- i. Requirements management strategy defining the Contractor's methodology for managing project requirements.

Deliverables:

- 4.0 One (1) electronic copy of the Contractor's Project Management Plan is to be provided to Canada as part of the bid proposal, updated within one month after contract award and thereafter as required.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-002 Master Plan and Schedule	DATA ITEM NUMBER: DID-M-002
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must schedule the work associated with the design, construction and delivery of the Naval Large Tugs.	
RELATED DIDS: DID-M-001 Project Management Plan DID-M-008 Monthly Progress Report DID-M-010 Monthly Progress Review Meeting DID-M-007 Kick-off Meeting DID-M-009 Technical Progress Review Meeting DID-TT-001 Dock Trial DID-TT-002 Sea Acceptance Trial DID-TT-003 Inclining Test	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Master Plan and Schedule must be prepared in MS Project, presented as a Gantt chart with dependencies included. Remarks: 2.0 The Master Plan and Schedule must identify all activities of the Contract in accordance with a recognized Work Breakdown Structure with a critical path including details of any activities that affect the Critical Path and impact successor activities. 3.0 The Master Plan and Schedule must include, and identify the planned sequence of, all aspects and activities of design and construction, studies, analyses, inspections and testing and trials programs and associated dates that the Contractor has identified in its bid submission, and that are required to perform the work.	

- 4.0 The Master Plan and Schedule must also include, but not limited to, all major milestones and key events such as the Preliminary and Critical Design Review, Factory Acceptance Tests, Dock and Sea Trials and Vessel Delivery.
- 5.0 The Master Plan and Schedule must allow time for Canada to review and respond to submitted deliverables in accordance with individual DID's. The review periods must be as listed in the CDRL, but may be less if mutually agreeable to both Canada and the Contractor.
- 6.0 Each update to the schedule must detail, in chronological sequence, the actions and events that have taken place over the reporting period with corresponding planned start and completion dates and actual start and completion dates.
- 7.0 The Master Plan and Schedule must include the following:
- a. Design Schedule: Must identify the design activities during the design of the vessels;
 - b. Construction Schedule: Must identify the shipbuilding activities during the construction of the vessels;
 - c. Drawing Schedule: Must detail the sequence of drawing production during the design and construction of the vessels, a list of proposed Construction Drawings, the date on which each Construction Drawing is scheduled to be submitted to the Contracting Authority for review, and must be maintained and updated on a continuing basis, including a record of actual comments from the Inspection Authority and Technical Authority;
 - d. Material Schedule: Must detail the sequence of ordering and delivery of material during the construction of the vessels, a list of material and equipment proposed to be purchased by the Contractor, excluding "stock room" material, the date on which the Contractor proposes to purchase each item of material or equipment, the anticipated delivery date of each item on the list; and separate lists, or separate sub-divisions of the Purchasing Schedule, with respect to:
 - (i) Hull;
 - (ii) Hull Outfit;
 - (iii) Machinery and equipment; and
 - (iv) Long lead items and delivery dates.

The Material Schedule shall be maintained and updated on a continuing basis including records of actual comments from the Inspection Authority and Technical Authority.
 - e. Major Milestones and Key Events Schedule: Must identify the milestones and Key Events (e.g. first steel cutting, first and last block placements, vessel launch, vessel delivery, each milestone payment claim, etc.);
 - f. Test and Trial Schedule: Must detail the scheduled sequence of all major tests and trial events leading to vessel delivery. Must clearly display the relationship of each prerequisite event for each test or trial; and
 - g. Factory Acceptance Test (FAT) Schedule: Must detail the scheduled sequence of all FATs leading to vessel delivery. Must clearly propose the location of each test.

Deliverables:

- 8.0 One (1) electronic copy of the proposed Master Plan and Schedule is to be provided to Canada as part of the bid proposal.
- 9.0 Status (and if necessary, updating) of the Master Plan and Schedule will be a standing item on the agenda for the Monthly Progress Review Meeting.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-003 Quality Plans	DATA ITEM NUMBER: DID-M-003
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must control the Quality of the various major work processes and where there must be opportune points to witness key Quality Program process points on either an occasional or continuing bases as part of the Quality Program verification activities.	
RELATED DIDS: DID-M-001 Project Management Plan	REFERENCES: ISO 10005 - Guidelines for Quality Plans
PREPARATION INSTRUCTIONS: Format: 1.0 The Quality Plans must be prepared in the Contractor's format. Requirements: 2.0 The Quality Plan 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, and describe, depict and define the Quality Program inspection and test activities. 3.0 The Quality Plan must address the following quality control elements, as a minimum: a. Management Representative b. Quality Assurance Manual c. Quality Assurance Program Descriptions d. Quality Reporting Organization e. Documentation f. Measuring and Testing Equipment g. Procurement h. Inspection and Test Plan i. Incoming Inspection	

- j. In-Process Inspection
 - k. Final Inspection
 - l. Special Processes
 - m. Quality Records
 - n. Non Conformance
 - o. Corrective Action
- 4.0 A Quality Plan for each of the following major work processes must be detailed to ensure product conformity with the System Requirements Document:
- a. Initial steel preparation, cutting and forming;
 - b. Pre-construction fabrication of hull components;
 - c. Module construction, outfitting and final preparation;
 - d. Hull assembly and fitting;
 - e. Major equipment acceptance inspections and tests;
 - f. Major equipment installation; and
 - g. Installed equipment inspections and tests.
- 5.0 The Quality Plans may reference other documents. Where referenced documents do not already exist, but are required by the Quality Plan, the plan must identify them and also identify when, how and by whom they must be prepared and approved. The documents referenced in the Quality Plans must be made available if requested.
- 6.0 The Quality Plans must describe how the Contractor will conform to the specified quality requirements of the Contract and specify how the required quality activities are to be carried out including quality assurance of subcontractors.
- Deliverables:
- 7.0 One electronic copy of the Quality Plans are to be provided to Canada as part of the bid proposal, updated within one month after contract award and thereafter as required.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-004 Risk Management Plan	DATA ITEM NUMBER: DID-M-004
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor plans to identify and record technical risks.	
RELATED DIDS: DID-M-001 Project Management Plan DID-M-008 Monthly Progress Report DID-M-010 Monthly Progress Review Meeting DID-M-013 Build Strategy	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Risk Management Plan must be prepared in the Contractor's format. Requirements: 2.0 The Contractor must have a plan and a process to manage risks in accordance with industry best practices. 3.0 The Risk Management Plan must include the Contractor's strategy and plan to identify, describe, assess, manage and mitigate risk that could impact on achievement of project objectives. The plan must contain the following as a minimum: <ul style="list-style-type: none"> a. Risk management planning including the concept for management and continuing review of risk; b. Risk identification methodology including a description of the Risk Register; c. Qualitative and quantitative risk analysis methodology; d. Risk response planning methodology; and e. Risk monitoring and control including reporting methodology to corporate management and Canada. 4.0 The Contractor's Risk Register, the template for which is to be created as part of the Risk Management Plan, must record project risks and be updated throughout the Contract and contain as	

a minimum:

- a. Risks or potential risks;
- b. The level of the risk;
- c. Potential impact of the risk;
- d. The Contractors work around plan / mitigation options and strategy;
- e. Date the risk was raised;
- f. Originator of the risk;
- g. Status of the risk; and
- h. Date the risk was resolved or is projected to be resolved.

Deliverables:

- 5.0 One electronic copy of the Contractor's Risk Management Plan is to be provided to Canada within two months of contract award.
- 6.0 The Contractor's Risk Register must be updated monthly and included in the Monthly Progress Review Report and discussed, as an agenda item, at all Monthly Progress Review Meetings.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-005 Technical Data Management Plan	DATA ITEM NUMBER: DID-M-005
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor plans to track and manage the configuration of technical and other data produced during the Naval Large Tugs design and construction process.	
RELATED DIDS: DID-M-001 Project Management Plan DID-M-009 Technical Progress Review Meeting	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Technical Data Management Plan must be developed in Microsoft Word in the Contractor's format. Requirements: 2.0 The Technical Data Management Plan must define the system by which the Contractor identifies tracks and manages the configuration of technical and other data produced as part of this work. Technical data must include reports, drawings, books and booklets, design data and other documentation. 3.0 As a minimum the Technical Data Management Plan must define the Contractor's system for: a. Identifying and numbering technical data. Note that all technical data must include the Work Breakdown Structure code as one of the identifiers; b. Managing and controlling versions of data; c. Notifying Canada of version changes; d. Using a register, index or equivalent system to track in a logically organized, single instance all of the data developed; and e. The register, index or equivalent system must be maintained current by the Contractor throughout the work and version controlled. The register must include, but not be limited to, the following information:	

- Revision level of document;
- Revision date of document;
- Revision description;
- Record of OPI for each item in the register; and
- Version and date of the register.

Deliverables:

- 4.0 One electronic copy of the Contractor's Technical Data Management Plan is to be provided to Canada within one month of contract award and updated as required.
- 5.0 The Contractor's register, index or equivalent used for recording technical information must be maintained current by the Contractor and submitted to the Technical Authority on request.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-006 Change Request Form	DATA ITEM NUMBER: DID-M-006
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the form that the Contractor must use to initiate a design change request to the Contract.	
RELATED DIDS: DID-M-001 Project Management Plan DID-CM-001 Compliance Verification Matrix DID-M-002 Master Plan and Schedule DID-M-005 Technical Data Management Plan DID-M-004 Risk Management Plan	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Change Request Form must be either the form PWGSC-TPSGC 1686, Quotation for Design Change or Additional Work, or the form PWGSC-TPSGC 1379.. Remarks: <ol style="list-style-type: none"> 2.0 The design Change Request Form must be either the form PWGSC-TPSGC 1686, Quotation for Design Change or Additional Work, or the form PWGSC-TPSGC 1379, as appropriate for the change being requested: 3.0 All design Change Requests to the technical baseline or Systems Requirement Document must be approved by Canada. Deliverable: <ol style="list-style-type: none"> 4.0 One electronic copy of the proposed Change Request Form must be provided to Canada as required. 	

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-007 Kick-off Meeting	DATA ITEM NUMBER: DID-M-007
DESCRIPTION/PURPOSE: To define how the Contractor must plan to manage the administrative aspects of the Kick-off Meeting.	
RELATED DIDS: DID-M-001 Project Management Plan DID-M-011 Action Item List	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 Administrative arrangements for the Kick-off Meeting must be in the Contractor's format. Remarks: 2.0 The meeting is to be held at Contractor's facility unless mutually agreed otherwise. 3.0 An agenda must be provided to all meeting attendees outlining the proposed structure of the meeting to permit participants to better prepare for the topics to be discussed. Canada may have comments to add to the agenda and the agenda must be approved by Canada prior to releasing to the attendees. 4.0 The agenda must include the following: a. List of expected attendees (Contractor and Canada); b. Time, date, location and expected duration of the meeting; c. Facilities and equipment to be provided for attending personnel; and d. A line-by-line review of the SRD and SOW. 5.0 The Contractor must produce minutes/records for the meeting summarizing the discussions and decisions reached and forward these to the DND Technical Authority (TA) for review, comment and signature. 6.0 The minutes must be prepared by the Contractor and signed by the Contractor, the TA, IA and the Contract Authority (CA) after all comments have been satisfactorily incorporated to confirm understanding and agreement between Canada and the Contractor regarding the scope of the	

Work and the technical requirements to be met under the contract.

7.0 The minutes must be prepared using an acceptable format within the constraints imposed herein. Meeting minutes must include the following, as a minimum:

- a. The scope, purpose and objective of the meeting;
- b. Time, date and meeting duration;
- c. Government attendees;
- d. Contractor attendees;
- e. Status of items discussed at the meeting;
- f. List of decisions made at the meeting;
- g. Addressees of any action items;
- h. Target dates for the completion of action items;
- i. Suggested agenda items for the next meetings; and
- j. The date, time and location of the next meeting.

Deliverables:

- 8.0 One electronic copy of the agenda must be provided to the TA, IA and the CA by the Contractor one calendar week prior to the meeting. Unless otherwise specified, any technical data, reports, presentations to be tabled, delivered or presented at the meeting must be submitted with the agenda.
- 9.0 One electronic copy of signed Records of Decision and Action Item List of the meeting must be forwarded to Canada within one week of the meeting being held. The meeting minutes must be signed as accepted by the Contractor, CA, IA and TA once comments are incorporated to the satisfaction of the TA.

SAMPLE KICK-OFF MEETING AGENDA

KICK-OFF MEETING

Date:

Time:

Location:

Attendees:

REVIEW OF THE PROJECT MANAGEMENT PLAN;

TECHNICAL REQUIREMENTS;

CRITICAL PATH ACTIVITIES; AND

ANY OTHER CONTRACTUAL OR PROGRAMMATIC ISSUES ASSOCIATED WITH THE PROJECT AS MUTUALLY AGREED BETWEEN THE TA, CA AND THE CONTRACTOR.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-008 Monthly Progress Report	DATA ITEM NUMBER: DID-M-008
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the report that the Contractor must produce on a monthly basis that must present an overview of the status of the project.	
RELATED DIDS: DID-M-002 Master Plan and Schedule DID-M-004 Risk Management Plan DID-M-010 Monthly Progress Review Meeting DID-M-014 Photographs DID-M-011 Action Item List DID-M-009 Technical Progress Review Meeting DID-E-001 Weight and Centre of Gravity Report	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The specific format of the Monthly Progress Report (MPR) must be developed by the Contractor and agreed to by Canada. 2.0 Each MPR must be signed as complete and accurate by the designated senior officer for the Contractor who must be responsible for its content and accuracy. Remarks: <ol style="list-style-type: none"> 3.0 Each MPR must contain the following as a minimum: <ol style="list-style-type: none"> a. A qualitative and quantitative explanation of the physical progress of the work since the last MPR including work planned vs. actual work completed to allow Canada to evaluate the progress of the work; b. An assessment of the current status of the project including a forecast of milestones to come 	

in the next three months;

- c. A list of unresolved technical and materiel issues;
 - d. An Action Items List identifying the status of all Action Items arising from all MPRs;
 - e. Risk Register showing new risks, updated risk status, work around plans and areas of concerns which may require assistance or guidance from Canada;
 - f. Key accomplishments/milestones to date;
 - g. Major tasks in progress during the reporting period and reasons for any deviation;
 - h. Any issues concerning cost, schedule and/or scope with explanations and variations included;
and
 - i. A summary of Milestones / Progress Claim payments.
- 4.0 The MPR must include identification of any work being performed under sub-contract.
- 5.0 The Contractor must submit with each MPR at least ten full-colour, digital, dated photographs of each vessel, once construction has commenced, in accordance with CDRL-M-014 and DID-M-014 Digital Photographs. The photographs must include those areas of the vessel that have changed the most or correspond to significant work issues for that particular month.

Deliverables:

- 6.0 One electronic copy of the Monthly Progress Reports, including attachments, must be delivered to Canada by the Contractor no later than one week after completion of the reporting period.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-009 Technical Progress Review Meeting	DATA ITEM NUMBER: DID-M-009
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must plan to manage the administrative aspects of the Technical Progress Review Meetings.	
RELATED DIDS: DID-M-008 Monthly Progress Report DID-M-010 Monthly Progress Review Meeting DID-M-011 Action Item List DID-M-005 Technical Data Management Plan	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 Administrative arrangements for the Technical Progress Review Meetings (TPRM) must be in the Contractor's format. Remarks: 2.0 Meetings are to be held at Contractor's facility unless mutually agreed otherwise. 3.0 An agenda must be provided to all meeting attendees outlining the proposed structure of the meeting to permit participants to better prepare for the topics to be discussed. Canada may have comments to add to the agenda and must be approved by Canada prior to releasing to the attendees. 4.0 The Agenda must include the following, as a minimum: a. List of expected attendees (Contractor and Canada); b. Meeting number; c. Time, date, location and expected duration of the meeting; d. Facilities and equipment to be provided for attending personnel; e. List of data items and documents, presentations, reports, deliverables to be reviewed /	

discussed or provided to support the meeting. Copies of all such data and documentation must be provided;

- f. List of new subject items to be reviewed / discussed by the Contractor and / or Canada; and
 - g. List of any outstanding action items from previous meetings where appropriate.
- 5.0 The Contractor must produce minutes/records for each TPRM summarizing the discussions and decisions reached and forward these to the DND Technical Authority (TA) for review, comment and signature.
- 6.0 Wherever possible the Monthly Progress Review Meeting and the TPRM are to be held together and must be co-chaired by the Contract Authority (CA) and the TA. In this instance the process for the agenda and minutes of the combined meeting must be as described above for the TPRM. The final agreed minutes between the parties must be prepared by the Contractor and signed by the Contractor, the TA, IA and the CA after all comments have been satisfactorily incorporated.
- 7.0 The minutes must be prepared using an acceptable format within the constraints imposed herein. Meeting minutes must include the following, as a minimum:
- a. The scope, purpose and objective of the meeting;
 - b. Time, date and meeting duration;
 - c. Government attendees;
 - d. Contractor attendees;
 - e. Status of items discussed at the meeting;
 - f. List of decisions made at the meeting;
 - g. Addressees of any action items;
 - h. Target dates for the completion of action items;
 - i. Suggested agenda items for the next meetings; and
 - j. The date, time and location of the next meeting.
- 8.0 Matters, arising outside normally scheduled meetings, and deemed by the Contractor to require the immediate attention of Canada, must be brought to the attention of the TA on an urgent basis.

Deliverables:

- 10.0 One electronic copy of the agenda must be provided to the TA, IA and the CA by the Contractor one calendar week prior to each meeting. Unless otherwise specified, any technical data, reports, presentations to be tabled, delivered or presented at the meeting must be submitted with the agenda.
- 11.0 One electronic copy of signed Records of Decision and updated Action Item List of each Technical Progress Review Meeting must be forwarded to Canada within one week of the meeting being held. The meeting minutes must be signed as accepted by the Contractor, CA, IA and TA once comments are incorporated to the satisfaction of the TA.

SAMPLE TECHNICAL REVIEW MEETING AGENDA

TECHNICAL MEETING #

Date:

Time:

Location:

Attendees:

1. ACCEPTANCE OF PREVIOUS MINUTES
2. REVIEW OF PREVIOUS ACTION ITEMS
3. TECHNICAL AUTHORITY – NEW ITEMS
4. CONTRACTOR – NEW ITEMS
5. DESIGN CHANGE STATUS (DCR LIST)
6. WEIGHT REPORT
7. MASTER EQUIPMENT LIST
8. TRANSPORT CANADA REGULATORY ISSUES
9. CLASSIFICATION SOCIETY ISSUES
10. OTHER ISSUES
11. ADJOURN

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-010 Monthly Progress Review Meeting	DATA ITEM NUMBER: DID-M-010
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must plan to manage the administrative aspects of the Monthly Progress Review Meetings.	
RELATED DIDS: DID-M-008 Monthly Progress Report DID-M-009 Technical Progress Review Meeting DID-M-011 Action Item List	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 Administrative arrangements for the Monthly Progress Review Meetings (MPRM) must be in the Contractor's format. Remarks: 2.0 Meetings are to be held at Contractor's facility unless mutually agreed otherwise. 3.0 An agenda must be provided to all meeting attendees outlining the proposed structure of the meeting to permit participants to better prepare for the topics to be discussed. Canada may have comments to add to the agenda and must be approved by Canada prior to releasing to the attendees. 4.0 The Agenda should include the following, as a minimum: a. List of expected attendees (Contractor and Canada); b. Meeting number; c. Time, date, location and expected duration of the meeting; d. Facilities and equipment to be provided for attending personnel; e. Work planned vs. actual work completed;	

- f. Current status of the project including a forecast of milestones to come;
 - g. Risk Register showing updated risk status and work around plans;
 - h. Key accomplishments/milestones to date; and
 - i. Update Design Change Requests
- 5.0 The Contractor must be required to produce minutes/records for each MPRM summarizing the discussions and decisions reached and forward these to the DND Technical Authority (TA), Inspection Authority (IA) and Contract Authority (CA) for review, comment and signature.
- 6.0 Wherever possible the MPRM and the Technical Progress Review Meeting are to be held together and must be co-chaired by the CA and the TA. In this instance the process for the agenda and minutes of the combined meeting must be as described above for the MPRM. The final agreed and approved minutes between the Parties must be prepared by the Contractor and signed by the Contractor, the TA, IA and the CA after all comments have been satisfactorily incorporated.
- 7.0 The minutes must be prepared using an acceptable format within the constraints imposed herein. Meeting minutes must include the following, as a minimum:
- a. The scope, purpose and objective of the meeting;
 - b. Time, date and meeting duration;
 - c. Government attendees;
 - d. Contractor attendees;
 - e. Status of items discussed at the meeting;
 - f. List of decisions made at the meeting;
 - g. Identify action addressees;
 - h. Target dates for the completion of action items;
 - i. Suggested agenda items for the next meetings; and
 - j. The date, time and location of the next meeting.

Deliverables:

- 8.0 One electronic copy of the agenda must be provided to the TA, IA and CA by the Contractor one calendar week prior to each meeting.
- 9.0 One electronic copy of signed approved minutes, and updated Action Item List, of each Monthly Progress Review Meeting must be forwarded to Canada within one week of the meeting being held. The meeting minutes must be signed as accepted by the Contractor, CA, IA and TA once comments are incorporated to the satisfaction of the CA.

SAMPLE MONTHLY PROGRESS REVIEW MEETING AGENDA

PROGRESS REVIEW MEETING #

Date:

Time:

Location:

Attendees:

1. ACCEPTANCE OF PREVIOUS MINUTES
2. REVIEW OF PREVIOUS ACTION ITEMS
3. TECHNICAL AUTHORITY – NEW ITEMS
4. CONTRACTOR – NEW ITEMS
5. REVIEW / SUMMARY OF PROJECT STATUS
6. REVIEW WORK PLANNED VERSUS ACTUAL WORK COMPLETED
7. REVIEW SCHEDULE AND KEY MILESTONES TO DATE
8. REVIEW WORK IN PROGRESS AND PROJECTED
9. REVIEW AND UPDATE RISK REGISTER
8. OTHER ITEMS AND ISSUES RELATED TO THE WORK
9. ADJOURN

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-011 Action Item List	DATA ITEM NUMBER: DID-M-011
DESCRIPTION/PURPOSE: To define how the Contractor will track and manage the status of all Action Items arising from meetings.	
RELATED DIDS: DID-M-008 Monthly Progress Report DID-M-009 Technical Progress Review Meeting DID-M-010 Monthly Progress Review Meeting DID-M-007 Kick-off Meeting	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The specific format of the Action Item List (AIL) must be developed by the Contractor and agreed to by Canada. Remarks: 2.0 The AIL must contain the following, as a minimum: <ul style="list-style-type: none"> a. identification number; b. title or description; c. date opened; d. action required; e. priority; f. organization responsible for taking action; g. brief statement of results in sufficient detail to clearly identify and track the action taken; h. date closed; and 	

i. status (open/closed).

3.0 The Contractor must ensure that, once entered, no entry is deleted.

4.0 The Contractor must review the AIL at each Progress Review Meeting.

5.0 The Contractor must include a subset of the list containing all open action items as an attachment to the Monthly Progress Reports.

Deliverables:

6.0 The Contractor must make an electronic copy of the most current AIL or any portion thereof available to Canada in accordance with CDRL, or when requested by Canada.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-012 Design Drawings	DATA ITEM NUMBER: DID-M-012
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must develop, present and deliver Design Drawings. This DID does not cover the technical content of drawings.	
RELATED DIDS:	REFERENCES: D-01-400-002/SF-000, Specification for Levels of Engineering Drawings and Associated Lists, 01 March 2011 ASME Y14.1M ASME Y.100M-1998 Or ASME standards (in general) CAN/CSA -Z234.1-89 Canadian Metric Practices Guide ISO 9660 DLM-009-022/SG 000, Standard for Packaging of Documentation, 16 January 1981 ANSI standards
PREPARATION INSTRUCTIONS: Format: 1.0 The Contractor must prepare and deliver Engineering Drawings and Associated Lists which meet the design disclosure and legibility requirements of the specified level as defined by D- 01-400-002/SF-000, Specification for Levels of Engineering Drawings and Associated Lists, 01 March 2011. 2.0 Drawings must be arranged such that their printed versions are sized in accordance with ASME Y14.1M. 3.0 Drawing practices must be in accordance with ASME Y.100M-1998. 4.0 Multi-sheet drawings contained within a single file are preferred over single file per sheet methodology.	

- 5.0 All drawings must include a border and title block. Borders and title blocks must comply with ASME Y14.1M and any other ASME standards as applicable.
- 6.0 All vector based drawings must be provided in an Autodesk AutoCAD 2015 DWG format. DWG files must be monotone (black and white) unless special requirements necessitate the use of colours (e.g. safety plans).
- 7.0 Any raster drawings that are not provided in a native vector format must be furnished in PDF format.
- 8.0 Drawings must comply with CAN/CSA -Z234.1-89 Canadian Metric Practices Guide.

Requirements:

- 9.0 Reference documents called up on the Engineering Drawings (excepting those, which are government, society and readily available industrial specifications or standards) must be included as part of the Engineering Drawings and Associated Lists.
- 10.0 Existing Contractor Drawings being provided as part of the Engineering Drawing Package must meet the requirements of paragraph 3.2 of D-01-400-002/SF-000 Specification for Levels of Engineering Drawings and Associated Lists, 01 March 2011. In the event that Contractor Drawings do not meet the specified requirements the Contractor must rework the drawings to ensure that the requirements are met.
- 11.0 A Technical Data Action Notice (TDAN) must be prepared listing all Drawings and Associated Lists delivered as a result of the Contract. A sample TDAN can be provided upon request.
- 12.0 The Contractor must provide the necessary types of drawings that will satisfy the sophistication of the specified drawing level. Drawing types selected must be in accordance with ASME Y14.24M-1989. Type selection must be subject to the approval of both the DND Technical Authority (TA) and DSCO 4-6.
- 13.0 Parts lists must be prepared integral with the drawings. On multi-sheet drawings, the parts list must be placed on sheet 1.
- 14.0 The Contractor must prepare a Family-Tree Drawing(s) of the complete configuration of the Engineering Drawing Package and it must be subject to the approval of both the DND TA and DSCO 4-6.
- 15.0 The Contractor must be fully responsible for the integration of the new and existing drawings to form a complete Engineering Drawing Package.
- 16.0 The Government of Canada must have rights in data as detailed in the Terms and Conditions of the contract.
- 17.0 The Contractor must mark all Foreground & Background Engineering Drawings & Associated Lists delivered under the Contract with a complete notation as detailed at "Intellectual Property Rights" and/or "Data Rights" clause(s) of the Contract.
- 18.0 Quality of the Engineering Drawings and Associated Lists delivered on the Contract is the responsibility of the contractor and subject to the quality requirements of the Contract.
- 19.0 Upon acceptance, Engineering Drawings, Associated Lists and Reference Data must be delivered

in soft copy form as outlined herein.

- 20.0 Soft copy deliverables must include the Engineering Drawings, Associated Lists, Reference Data and the associated Metadata in electronic form.
- 21.0 The media form for final delivery of electronic data must be CD-ROM, written in accordance with ISO 9660 (File compression software must not be used). Each CD-ROM and its case must be labeled or marked in a method of the Contractor's choosing. Each label or marking must display the Batch Number, Contract / Task number, TDAN number and the date the CD-ROM was created.
- 22.0 Reproducible and non-reproducible data must be preserved packaged and marked in accordance with DLM-009-022/SG 000, Standard for Packaging of Documentation, 16 January 1981. Exterior shipping containers must be marked with the Contract and TDAN number and in the event of loss or damage while in shipment, the responsibility for replacement must be that of the Contractor and at the Contractor's expense.
- 23.0 Specific Requirements for drawings are:
- a. General
 - System design details, i.e. piping runs, sizes, etc. shall be sufficiently and clearly defined in system drawings to facilitate installation of the equipment and system;
 - b. Auxiliary Systems
 - A separate diagram must be provided for each system;
 - The diagram must include the major components of the systems in their approximate locations in relation to the ship and associated components;
 - The diagram must indicate the material schedule (schedule of piping, valves and fittings), flow rate, temperature, pressure, and all devices which measure, control or modify the flow or pressure. Pumps, heat exchangers, valves, gages, etc. must be clearly identified;
 - The diagram must contain data tables indicating the service, capacity and pressure for each major equipment item within the system (e.g. pump, eductor, ballast water treatment unit, heat exchangers, etc.);
 - Data tables must also be provided to indicate the make, model and characteristics of specialty valves, regulating and control devices; and
 - The diagram must use symbols in accordance with ANSI (American National Standards Institute) standards and contain a list of symbols for the components within the diagram. Notes describing special features of components, and their identification, which are unique to the system operation must be included. All valves and pipe lines must be identified in same manner as labels and tags on the vessel.
 - c. Machinery Arrangement Drawings
 - The drawings must show plan, elevation, and section views of main and auxiliary machinery spaces. Principal units are to be identified, including clearances for maintenance and inspection.

d. Accommodation, and Service Space Arrangement Drawings and Outfit

- The drawings must show plan, elevation, and section views of the spaces;
- The level of detail of the Arrangement and Outfit drawings must be sufficient to enable the complete outfitting of all of the specified spaces within the NLT; and
- Drawings must detail the overall arrangement of the spaces showing the locations and arrangement of equipment, furnishings, and fixtures in space; including lights fixtures and switches, and electrical outlets. This drawing must demonstrate that the space meets all of the requirements for area, functionality, space and accessibility.

Deliverables:

24.0 Design Drawings, TDAN, Engineering Drawings and Associated Lists, Family Tree Drawings, Reference Data and associated Meta Data must be provided as per this Statement of Work, Contract Data Requirement Lists, and DIDs.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-013 Build Strategy	DATA ITEM NUMBER: DID-M-013
DESCRIPTION/PURPOSE: The purpose of this DID is for the Contractor to define the construction methodology, construction techniques and shipyard facilities for building the Naval Large Tugs together with any risks the Contractor envisages in implementing this Strategy.	
RELATED DIDS: DID-M-001 Project Management Plan DID-M-004 Risk Management Plan DID-M-002 Master Plan and Schedule DID-M-003 Quality Plans	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Build Strategy Report must be developed in Contractor format. Requirements: 2.0 Submission at Preliminary Design review must include: a. The level of fabrication, assembly, outfitting and integration at various stages of the construction process; b. How the Vessel's Build Strategy supports the delivery schedule; c. Long Lead Time Materials, Contractor Furnished Material and Government Supplied Material; d. Design aspects driven or dependent on the build strategy; e. Production concerns such as industrial base capabilities and limitations; and f. Description of current & planned shipyard facilities. 3.0 Submission at Critical design review must include updates to the above and also: a. Items categorized as any one, or combination of, the following attributes: high cost, high risk, or long lead time. The Contractor must provide details of how the production, delivery and	

integration of these items will be completed;

- b. A timeline for ordering Long Lead Time Material with supporting vendor/supplier/Government data;
- c. The major equipment to be used in the vessel's construction. If major equipment is needed but is not currently available at the Shipyard facility, the Contractor must verify the necessary equipment can be purchased or rented; and
- d. The Contractor must demonstrate that the Shipyard facilities are adequate to execute their Vessel's Build Strategy, including but not limited to the following:
 - Maximum Lift Capacity;
 - Plate Handling/Bending/Rolling Limitations;
 - Unit/Assembly Size Limitations;
 - Blast & Paint Facility;
 - Burning Machines;
 - Pipe Bending Machines;
 - Robotic Equipment;
 - Launch Capability;
 - Shore power capacity and quality; and
 - All other major pieces of equipment that will aid the Shipyard in construction.

Deliverables

- 4.0 One electronic copy of the Build Strategy must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.
- 5.0 One electronic copy of Build Strategy must be provided by the Contractor 15 calendar days prior to the Critical Design Review.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-M-014 Photographs	DATA ITEM NUMBER: DID-M-014
DESCRIPTION/PURPOSE: To define how the Contractor must develop, present and deliver photographs.	
RELATED DIDS:	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Contractor must take and deliver digital photographs as required in accordance with this DID. Requirements: 2.0 All photographs must be delivered at the native resolution they were taken. 3.0 Progress photographs must be at least 2240 x 1680 pixels (4 megapixel). 4.0 Display photographs must be at least 3264 x 2448 pixels (8 megapixel). 5.0 Interior and exterior spaces photographs must be at least 2240 x 1680 pixels (4 megapixels). 6.0 All photographs must be delivered in either JPEG (Joint Photographic Experts Group) or PNG (Portable Network Graphics) format with no special requirements required to view the photographs. 7.0 All photographs must be delivered with the original Exchangeable Image File Format (EXIF) tags for date and time unmodified. 8.0 All photographs must be delivered digitally, in full color with a file name format that provides a clear indication of the subject of the photograph (including location), the date the photograph was taken and the deliverable it is related to. Deliverables: 9.0 Photographs must be provided as per this Statement of Work, Contract Data Requirement Lists, and DIDs.	

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-CM-001 Compliance Verification Matrix	DATA ITEM NUMBER: DID-CM-001
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor is going to demonstrate that all aspects of the design comply with the requirements contained in the Systems Requirement Document.	
RELATED DIDS: DID-M-001 Project Management Plan	REFERENCES: Regulatory Regime Classification Society Rules
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Compliance Verification is through the completion of a Compliance Verification Matrix that must be in Microsoft Excel or compatible file format. Remarks: <ol style="list-style-type: none"> 2.0 For each specific requirement within the Naval Large Tug Systems Requirement Document (SRD), of Annex A, the Contractor must identify the objective evidence in the form of a deliverable that must be provided to demonstrate that the requirement has been met by the design. 3.0 In addition to the specific requirements within the SRD of Annex A, the Contractor is also required to demonstrate compliance, in the Compliance Verification Matrix, with Regulatory Regime or Class requirements that amplify or govern SRD of Annex A requirements. 4.0 Objective evidence may take the form of a drawing, report or trial called for in an existing DID. However, the existing DIDs should not be considered exhaustive. Where the Contractor determines that additional objective evidence, in the form of analysis and a report is required, the Contractor can provide these analyses or reports in a Contractor developed format. 5.0 It is expected that the Compliance Verification Matrix will develop progressively as the design matures. 6.0 In addition to the objective evidence to be delivered during design, the Contractor must also consider and identify inspections, tests and trials that would be appropriate to demonstrate SRD of Annex A requirements during build and vessel acceptance. Deliverables:	

- 7.0 One electronic copy of the Compliance Verification Matrix must be provided to Canada by the Contractor 15 calendar days prior to the Preliminary Design Review showing that all requirements of the SRD of Annex A and the Preliminary Design Review Data Package have been met.
- 8.0 One electronic copy of Compliance Verification Matrix must be provided to Canada by the Contractor 15 calendar days prior to the Critical Design Review showing that all requirements of the SRD of Annex A and the Critical Design Data Package have been met.
- 9.0 One electronic copy of the Compliance Verification Matrix must be provided to Canada by the Contractor 15 days prior to the Acceptance Review for each vessel showing that all requirements of the SRD of Annex A and the Acceptance Review Data Package have been met.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-001 Weight and Centre of Gravity Report	DATA ITEM NUMBER: DID-E-001
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the report that the Contractor must develop to present the Weight and Centre of Gravity estimates.	
RELATED DIDS: DID-M-008 Monthly Progress Report DID-E-002 Trim, Stability and Freeboard Report DID-TT-003 Inclining Test Plan and Procedure	REFERENCES: D-03-003-024/SG-001, Work Breakdown Structure for Canadian Forces Ships and Submarines, 14 February 2012
PREPARATION INSTRUCTIONS: Format: 1.0 The Weight and Centre of Gravity report and Weight and Center of Gravity calculations and data must be in book form and in Microsoft Excel or compatible spreadsheet file format. Remarks: 2.0 Preferably the Weight and Centre of Gravity report must be presented in accordance with the Work Breakdown Structure (WBS) for Canadian Forces Ships and Submarines. However, the WBS for the existing proven parent Tug is acceptable provided there is a logical demarcation of the weight estimate between the: a. Hull Structure; b. Propulsion System; c. Electrical System; d. Electronic Systems; e. Auxiliary Systems; and f. Outfit and Furnishing. 3.0 The Weight and Centre of Gravity Report must include the following: a. Executive Summary describing current weight and centres of gravity;	

- b. Summary Table of the current weight estimate;
 - c. Table indicating differences between the current and previous weight estimate for each WBS group;
 - d. Summary of updates / changes to weight estimate;
 - e. Assessment of current margins in the weight estimate and recommendations on changes, if applicable;
 - f. Impact of updates on the design, stability in particular;
 - g. Lightship Weight Summary;
 - h. Loading Conditions for Stability Analysis; and
 - i. Detailed Lightship Weight Report (to an equipment level of detail).
- 4.0 Each element in the detailed Lightship Weight Report must include:
- a. A WBS Identifier;
 - b. A brief description of the item including make and model number;
 - c. The weight in kilograms to one decimal place;
 - d. The identity of the source of the weight (estimated, calculated, vendor supplied or weighed); and
 - e. Longitudinal, transverse and vertical centre of gravity coordinates in meters to two decimal places.
- 5.0 The Contractor shall customize a weight control program based on the industry standard ASTM F1808 Standard Guide for Weight Control Technical Requirements for Surface Ships.
- 6.0 The Contractor must include in the weight estimates, for both the Preliminary Design Review and the Critical Design Review, the remaining design margin and the weight and centre of gravity allocation of the construction margin.
- 7.0 On lead ship completion, and following the Inclining Experiment on this first of class, the Weight and Centre of Gravity Report must be updated to reflect the as inclined lightship by the addition of a one line inclining correction.
- 8.0 For all subsequent vessels, provided that the lightship displacement is within 2% of the first of class, the first of class Weight and Centre of Gravity Report can be used as is.
- 9.0 As the weight reports are updated Canada must be informed of discrepancies that will negatively affect vessel performance. Each individual update to the Weight and Centre of gravity report must be indicated and text detailing the updates and discrepancies must be included.
- 10.0 Until the Vessels are accepted by Canada, the Contractor must monitor the weight for each vessel and report monthly to Canada, as part of the Monthly Progress Report (DID-M-008), for review and comment.

11.0 Government Supplied Materiel Margin is the weight and moment allowance in the weight estimates to account for increases associated with Government Supplied Materiel. The Government Supplied Materiel margin is 15% of the identified Government Supplied Materiel weight.

12.0 The Contractor shall consider all the Government Supplied Materiel and Government Supply Material as part of the ship's baseline design weight based on the information provided by Canada. Any weight differences between the actual weight and the information provided by Canada shall be applied to the Government Supplied Materiel Margin.

Deliverables:

13.0 One electronic copy of the Weight and Centre of Gravity Report must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.

14.0 One electronic copy of the Weight and Centre of Gravity Report must be provided by the Contractor 15 calendar days prior to the Critical Design Review.

15.0 One electronic copy of the Weight and Centre of Gravity Report must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

16.0 One electronic copy of the Weight and Centre of Gravity Report must be provided by the Contractor on delivery of the first and all subsequent vessels.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-002 Trim, Stability and Freeboard Report	DATA ITEM NUMBER: DID-E-002
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the report that the Contractor must produce to demonstrate that the design meets the minimum freeboard, intact and damaged stability requirements.	
RELATED DIDS: DID-E-001 Weights and Centre of Gravity DID-TT-003 Inclining Test Plan and Procedure	REFERENCES: TP 7301, STAB 1
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Trim, Stability and Freeboard Report (TSFR) must be presented in book form in accordance with the guidelines in TP 7301, STAB 1. 2.0 The stability electronic files (including all files required to make the TSFR) must be delivered to the Technical Authority in readable GHS format including input run files and geometric files. Remarks: <ol style="list-style-type: none"> 3.0 The TSFR must contain stability data and details for each of the following loading conditions in salt and fresh water: <ol style="list-style-type: none"> a. Lightship Condition - ship completely outfitted for sea but with no crew or stores and with all fuel, fresh water and water ballast tanks empty; b. Departure Condition - lightship condition, plus crew, full fuel, water and stores normally distributed; c. Arrival Condition - lightship condition, plus crew, 10% fuel, water and stores normally distributed; d. Worst Designed Operating Condition - any condition likely to be encountered in service in which the distribution and quantity of consumables produce lower values of GZ and/or GM than conditions (b) or (c) above; and e. Worst Operating Condition with the accumulation of ice. The TSFR must also contain:	

- a. A List of Principal Particulars:
- Length (overall);
 - Length (between perpendiculars);
 - Beam;
 - Depth (to freeboard deck);
 - Load Line Draft;
 - Load Line Displacement;
 - Light Ship Draft;
 - Light Ship Displacement;
 - Light Ship VCG;
 - Light Ship LCG;
 - Light Ship TCG; and
 - Ship's Complement.
- b. Tank capacities, center of gravity (individual and totals); and
- c. Hydrostatics and cross curves (KN) table.

4.0 The exact position of all draft marks shall be shown on the ship's docking plan and the trim and stability manual.

5.0 All numerical data provided in the Stability Analysis must be presented in the following units:

- a. Length, Draft, VCG, LCG, TCG – Metres (m);
- b. All Tank Capacities – Cubic Metres (m³) and Metric Tons (MT);
- c. Dry Cargo – Metric Tons (MT); and
- d. Liquid Cargo – Cubic Metres (m³) and Metric Tons (MT).

Deliverables:

- 6.0 One electronic copy of the TSFR must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.
- 7.0 One electronic copy of the TSFR must be provided by the Contractor 15 calendar days prior to the Critical Design Review.
- 8.0 One electronic copy of the TSFR must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

9.0 One electronic copy of the TSFR must be provided by the Contractor on delivery of the first and all subsequent vessels.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-003 Electrical Load Analysis and Report	DATA ITEM NUMBER: DID-E-003
DESCRIPTION/PURPOSE: <p>The purpose of this DID is to define the content of the report, and associated drawings, that the Contractor must develop to present the aggregate power demands of all electrical loads on the Naval Large Tug under various operating conditions.</p>	
RELATED DIDS: DID-M-012 Design Drawings DID-E-001 Weights and Centre of Gravity Report	REFERENCES: IEEE 45. A Guide to Electrical Installations on Shipboard Statutory regulations Classification Society Rules
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Electrical Load Analysis (ELA) and Report must be in book form and in Microsoft Excel or compatible file format. 2.0 The results should preferably be presented using the same Work Breakdown Structure (WBS) as used in the Weight and Centre of Gravity Report (DID-E-001). However, the WBS for the Electrical Load Analysis for the existing proven parent Tug is acceptable. 3.0 The ELA and Report must include text, graphs and supporting calculations. 4.0 Supporting drawings must be presented in a format as indicated in DID-M-012 Design Drawings. 5.0 All circuits shall be identified using the circuit designations in IEEE 45. Where designations for systems are not available in IEEE 45, the Contractor shall submit proposals to the Technical Authority for approval. Remarks: <ol style="list-style-type: none"> 6.0 The Electrical Load Analysis must consist of a complete tabulation, by WBS Group, of all user equipment, their connected power and the estimated power required under various operating states of the ship for both AC and DC systems. 7.0 The operating states to be considered must include: <ol style="list-style-type: none"> a. Vessel Alongside on Shore Power; 	

- b. Vessel Alongside on Ship's Power;
 - c. Vessel Towing;
 - d. Steaming at Maximum Speed;
 - e. Steaming at Cruising Speed;
 - f. Mission at low speed;
 - g. Emergency.
- 8.0 For each state, both hot and cold climatic conditions must also be considered.
- 9.0 Calculations must be tabulated and totals provided to confirm the sizing of various elements of the electric plant, such as generators, transformer banks and power conversion equipment. Loads controlled by automatic load shedding must be noted.
- 10.0 Estimated Demand Factors (IEEE 45 Definition) and Diversity Factors must be applied for all conditions.
- 11.0 The ELA must include the kW, kVA and power factor ratings of the selected equipment to be installed and the quantities and usage factors for all electrical consumers. All loads are to be categorized as either estimated or vendor specific equipment values. All expected margins and losses must be incorporated into the ELA.
- 12.0 A summary of the aggregate loads with estimated demand factors are required for each of the WBS Groups presented.
- 13.0 A single line diagram must be provided by the Contractor to illustrate the proposed electrical system configurations. These drawings must include generation equipment, capacity levels, points of transfer or switching, distribution arrangements and significant loads.
- 14.0 Preliminary equipment ratings, such as generator and motor ratings, transformer KVA and circuit breaker sizes must be indicated.
- 15.0 The ELA Report must include a description of the electrical distribution system and its components.
- 16.0 The ELA Report must include a description of the power management systems and operation of the system including supporting calculations used to size and specify battery banks, chargers, transforming equipment, inverters, converters, panels and alternators.
- 17.0 The ELA Report must also describe how the design complies with the SRD of Annex A, statutory regulations and Classification Society requirements.
- 18.0 The Contractor shall perform and submit a short circuit fault current analysis of the system to select the appropriate circuit breakers for overload and short-circuit protection.
- 19.0 In support of generator set selection, the Contractor shall provide statistical data pertinent to the generator set including the following:
- (a) ISO 8528-1 power rating, performance, specific fuel consumption, lubricating oil consumption;

- (b) Adjusted rating for unrestricted service and classification society type approval certificate; and
- (c) Reliability and maintenance data such as hours between oil and filter changes, and hours between overhaul.

Deliverables:

- 20.0 One electronic copy of the Electrical Load Analysis and Report must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.
- 21.0 One electronic copy of the Electrical Load Analysis and Report must be provided by the Contractor 15 calendar days prior to the Critical Design Review.
- 22.0 One electronic copy of the Electrical Load Analysis and Report must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-004 Antenna Arrangement	DATA ITEM NUMBER: DID-E-004
DESCRIPTION/PURPOSE: The purpose of this DID is to define the details that the Contractor must provide to demonstrate that the proposed Antenna Arrangement will be able to operate without physical or electromagnetic interference.	
RELATED DIDS: DID-M-012 Design Drawings	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The narrative and any calculations associated with the Antenna Arrangement can be presented in Contractor developed format. 2.0 Supporting drawings must be presented in a format as indicated in DID-M-012 Design Drawings. Remarks: <ol style="list-style-type: none"> 3.0 The Antenna Arrangement must contain: <ol style="list-style-type: none"> a. A listing of all antennae, cables and equipment that are part of the proposed antennae configuration, as well as their basic electrical and physical parameters and vendor furnished information; b. An Antenna Arrangement drawing showing the disposition of all antenna on the tug and the distance between components; c. A narrative, indicating all factors considered for the proposed antennae arrangement, and the impact of each factor on the selection of the proposed configuration; d. The results of all analyses, calculations, simulation and modeling undertaken by the Contractor in predicting or assessing antenna and structural electromagnetic interference problems and performance on the antenna construction; e. The results must verify that the EMI (Electro-magnetic Interference) and RFI (Radio Frequency Interference) are within acceptable limits; and f. A detailed description of alternative antenna configurations that were considered with reasons for rejection. 	

- g. Should the antenna arrangement be identical to the arrangement on the proven parent tug design, items 2 c, 2 d, 2 e and 2 f above can be substituted by trial data from the proven parent tug demonstrating satisfactory performance of all antenna systems.

Deliverables:

- 4.0 One electronic copy of the Antenna Arrangement including text, drawings and tabulated results must be provided by the Contractor 15 calendar days prior to the Critical Design Review.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-005 Bridge Arrangement	DATA ITEM NUMBER: DID-E-005
DESCRIPTION/PURPOSE: The purpose of this DID is to define the details that the Contractor must provide that will demonstrate that the Bridge Arrangement meets all of the requirements specified in the Statement of Requirement Document (SRD) of Annex A as well as the associated standards.	
RELATED DIDS: DID-M-012 Design Drawings	REFERENCES: International Rules and statutory regulations
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Bridge Arrangement drawing must be presented in a format as indicated in DID-M-012 Design Drawings. 2.0 Supporting documentation can be presented in Contractor developed format. 3.0 Sightlines must be demonstrated by 3D modeling. Remarks: <ol style="list-style-type: none"> 4.0 The Bridge Arrangement drawing must provide annotated plan, profile and sectional views through the Bridge showing the location of all fitted equipment, outfit and furnishing. 5.0 The Bridge Arrangement drawing shall include the location of all bridge consoles, equipment and items of outfit to demonstrate that the size of the bridge and the layout meets the requirements to support normal operations. 6.0 At the Preliminary Design Review (PDR) the Bridge Arrangement Drawing need only show the size and location of the Bridge and Machinery Console. 7.0 At the Critical Design Review (CDR) separate drawings must be provided for both the Bridge and Machinery consoles indicating the detailed arrangement of each. 8.0 Supporting documentation must demonstrate that the proposed Bridge Arrangement meets the SRD of Annex A, International Rules and statutory regulations. 9.0 The supporting documentation must describe the methodology used to optimize the layout and the functional and operational factors considered during development of the layout. 10.0 The supporting documentation must include a copy of the drawings and computer graphics used to 	

provide a perspective of equipment locations, sightlines and the ergonomics to be encountered by Bridge staff.

Deliverables:

- 11.0 One electronic copy of the Bridge Arrangement and supporting documentation must be provided by the Contractor 15 calendar days prior to the PDR.
- 12.0 One electronic copy of the Bridge Arrangement and supporting documentation must be provided by the Contractor 15 calendar days prior to the CDR.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-006 Preliminary Design Review Data Package	DATA ITEM NUMBER: DID-E-006
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the data package that the Contractor must develop, deliver and present at the Preliminary Design Review for consideration, discussion, agreement and further development during the Final Design Phase.	
RELATED DIDS: DID-M-012 Design Drawings DID-M-013 Build Strategy DID-E-001 Weights and Centre of Gravity Report DID-E-002 Trim, Stability and Freeboard Report DID-E-003 Electrical Load Analysis and Report DID-E-004 Antenna Arrangement DID-E-005 Bridge Arrangement DID-TT-001 Dock Trial Plan and Procedure DID-TT-002 Sea Acceptance Trials and Procedure	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Preliminary Design Data Package must consist of drawings, reports and analysis. Reports and analysis can be in Contractor Developed formats. Drawings must be produced in accordance with DID-M-012 Design Drawings. Remarks: 2.0 The Contractor must provide, as a minimum, the following information, drawings and background material for the Preliminary Design Review in addition to those required by other DIDs: a. General:	

- General Arrangement – Including outboard profile, centre line profile, main deck and deckhouse top including mast;
 - Working Deck Layout – Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Main Machinery Room - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Auxiliary Machinery Room(s) (if fitted) - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Thruster Compartment - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Galley - Detailed arrangement demonstrating functionality of equipment and layout for required use;
 - Mess / Lounge - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Cabins - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Store Rooms - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Lines Plan and Table of Offsets;
 - Drawings depicting the Parent tug operating under the flare of RCN vessels; and
 - Removal Routes.
- b. Structural Drawings including arrangements for all cable penetrations of deck and bulkhead:
- Structural Profile and Decks;
 - Mid-Ship Section;
 - Deckhouse and Bulwarks;
 - Shell Plating and Framing Expansion;
 - Transverse and Longitudinal Bulkheads;
 - Structural and Non Structural Tanks;
 - Mast Structure; and
 - Lifting and Towing Arrangements and Details.
- c. Outfit Drawings:

- Fender Arrangement;
 - Towing Arrangement and Fittings; and
 - Anchors and Mooring Arrangement.
- d. Schedules Lists and Plans:
- Doors and Hatches Schedule;
 - Windows, and Portlights and sidelights Schedule;
 - Lifesaving Equipment Plan; and
 - Safety Plan showing Fire Protection, Fire Fighting and Emergency Equipment.
- e. Electrical and Electronic Drawings:
- Electronic Equipment Arrangement;
 - Electrical Single Line Diagram for all Systems; and
 - EMI/EMC Plan.
- f. Calculations and Analysis:
- Hydrodynamic Performance – derived from a parent proven ship inclusive of the environment conditions outlined in the SRD of Annex A;
 - Tank Capacity Plan;
 - Speed, Power, Range and Endurance Report;
 - Anode requirements and location;
 - Bollard Pull Calculations;
 - Build Strategy (DID-M-013);
 - Weights and Centre of Gravity Report (DID-E-001);
 - Trim, Stability and Freeboard Report (DID-E-002);
 - Electrical Load Analysis (DID-E-003);
 - Antenna Arrangement (DID-E-004);
 - Bridge Arrangement (DID-E-005);
 - Dock Trial Plan and Procedure (DID-TT-001); and
 - Sea Acceptance Trials and Procedure (DID-TT-002).

Remarks:

- 3.0 The Contractor shall submit calculations and data to the Technical Authority (TA) that demonstrates that the design and the selected equipment and components satisfy the intent of the SRD of Annex A.
- 4.0 The Contractor shall submit a Schedule of Deck Coverings with samples of coverings from which the Technical Authority can make specific selections;
- 5.0 The Contractor shall submit a Piping Schedule that provides details of components and isolation to minimize galvanic corrosion;
- 6.0 The Contractor shall submit a Painting Schedule for the vessels based on CFTO D-23-003-005/SF-002, The Preservation and Painting of HMC Vessels, to the TA for comment;
- 7.0 A schedule of all cables fitted, listing type, voltage and temperature rating, number and size of conductors, current rating, identification number, and weight per metre shall be submitted to TA;
- 8.0 Prior to the detail design phase, the Contractor shall provide an Engine International Air Pollution Prevention Certificate and statistical data pertinent to the proposed diesel engines including the following: - ISO 3046-1 standard power rating, the specific fuel consumption, and lubricating oil consumption.

Deliverables:

- 9.0 One electronic copy of the Preliminary Design Data Package must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-007 Critical Design Review Data Package	DATA ITEM NUMBER: DID-E-007
DESCRIPTION/PURPOSE: The purpose of this DID is to define the contents of the data package that the Contractor must develop, deliver and present at the Critical Design Review (CDR) for consideration, discussion and, agreement before the Production Engineering Package is finalised.	
RELATED DIDS: DID-M-012 Design Drawings DID-M-013 Build Strategy DID-E-001 Weights and Centre of Gravity Report DID-E-002 Trim, Stability and Freeboard Report DID-E-003 Electrical Load Analysis and Report DID-E-004 Antenna Arrangement DID-E-005 Bridge Arrangement DID-E-008 Acoustic Management Report DID-E-009 Structural Adequacy and Vibration Analysis Report DID-TT-001 Dock Trial Plan and Procedure DID-TT-002 Sea Acceptance Trials and Procedure DID-ILS-001 Master Equipment List DID-ILS-002 Hazardous Materials Database DID-ILS-004 Maintenance Analysis Report DID-ILS-005 Recommended Spare Parts List DID-T-001 Training Plan	REFERENCES:

PREPARATION INSTRUCTIONS:

Format:

- 1.0 The CDR Data Package must consist of drawings, reports and analysis. Reports and analysis can be in Contractor Developed formats. Drawings must be produced in accordance with DID-M-012 Design Drawings.

Remarks:

- 2.0 The Contractor must provide, as a minimum, the following information, drawings and background material for the CDR in addition to those required by other DIDs:
 - a. General:
 - General Arrangement – Including outboard profile, centre line profile, main deck and deckhouse top including mast;
 - Working Deck Layout – Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Main Machinery Room - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Auxiliary Machinery Room(s) (if fitted) - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Thruster Compartment - Detailed arrangement demonstrating functionality of equipment and layout for required operations and maintenance;
 - Galley - Detailed arrangement demonstrating functionality of equipment and layout for required use;
 - Mess / Lounge - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Cabins - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Store Rooms - Detailed arrangement demonstrating functionality of fittings and layout for required use;
 - Lines Plan and Table of Offsets;
 - Tank Capacity Plan;
 - Docking Plan and Draft Marks;
 - Lifting Points; and
 - Removal Routes.
 - b. Structural Drawings including arrangements for all cable penetrations of deck and bulkhead:

- Structural Profile and Decks;
 - Mid-Ship Section;
 - Deckhouse and Bulwarks;
 - Shell Plating and Framing Expansion;
 - Transverse and Longitudinal Bulkheads;
 - Web Frames and Sections;
 - Bow and Stern Framing;
 - All Machinery and Equipment Foundations, where resilient mountings are installed, the type and quantity of the mounting must be listed;
 - Struts and Supporting Structure;
 - Deck Machinery Foundations including Towing Arrangements, where resilient mountings are installed, the type and quantity of the mounting must be listed;
 - Structural and Non Structural Tanks;
 - Lifting and Towing Arrangements and Details; and
 - Welding Schedule.
- c. Outfit Drawings:
- Guard Rails, Handrails and Railings;
 - Ladders and Stairways;
 - Fender Arrangement;
 - Anchor and Mooring Arrangement;
 - Corrosion Protection System; and
 - Firefighting and Lifesaving Arrangement.
- d. Schedules Lists and Plans:
- Paint Schedule;
 - Minor Bulkhead and Joiner Bulkhead Plan;
 - Insulation Schedule;
 - Deck Covering Schedule;
 - Doors and Hatches Schedule;

- Windows, and Portlights and sidelights Schedule;
 - Lifesaving Equipment Plan;
 - Safety Plan showing Fire Protection, Fire Fighting and Emergency Equipment; and
 - Lock and Key Plan.
- e. System Diagrams, Arrangements, Piping and Instrumentation, including calculations to support proposed dimensions of all service lines along with information such as pipe size, length, fluid flow and pressure drop, margins for corrosion, erosion, and mechanical effects:
- Engine Air Intake and Exhaust Arrangement;
 - HVAC and Refrigeration Systems;
 - Ventilation and Exhaust Arrangements and Details;
 - Firemain;
 - Fixed Fire Extinguishing/Suppression Systems;
 - Bilge and Ballast System;
 - Diesel Fuel Oil System;
 - Hydraulic Systems;
 - Black and Grey Water Sanitary Systems;
 - Cooling Water Systems;
 - Scuppers and Deck Drains;
 - Compressed Air Systems;
 - Lube Oil Systems; and
 - Hot and Cold Potable Water Systems.
- f. Alarm, Monitoring and Control Systems:
- Propulsion Control System, Monitoring and Alarm;
 - Generator/Electrical System Control, Monitoring and Alarm;
 - Bilge and Fire Monitoring and Alarm;
 - Fire Detection and Suppression System(s) Control;
 - Steering System Monitoring, Control and Alarm; and
 - Centralized Control, Alarm and Monitoring System.

g. Electrical and Electronic Drawings:

- Electrical Distribution Panels including Wiring Diagrams;
- Electronic Equipment Interconnect Diagrams;
- Interior Communication Diagram;
- Exterior Communication Diagram;
- List of Electronic Navigation Appliances;
- Lighting Key Plan;
- Electronic Equipment Arrangement;
- Electrical Single Line Diagram for all Systems;
- Electrical Termination details for all Electrical Systems;
- Electrical Cable Schedule listing type, voltage and temperature rating, number and size of conductors, current rating, identification number, and weight per metre; and
- 115/230V Receptacles.

h. Calculations and Analysis:

- Hydrodynamic Performance – derived from a parent proven ship inclusive of the environment conditions outlined in the SRD of Annex A;
- Speed, Power, Range and Endurance Report;
- Build Strategy (DID-M-013);
- Weights and Centre of Gravity Report (DID-E-001);
- Trim, Stability and Freeboard Report (DID-E-002);
- Electrical Load Analysis (DID-E-003);
- Antenna Arrangement (DID-E-004);
- Bridge Arrangement (DID-E-005);
- Acoustic Management Report (DID-E-008);
- Structural Adequacy and Vibration Analysis Report (DID-E-009);
- Dock Trial Plan and Procedure (DID-TT-001);
- Sea Acceptance Trials and Procedure (DID-TT-002);
- Electrical Fault Current Analysis;

- Electrical Protective Device Coordination Study;
- Propulsion System Calculations (Including axial, lateral, and torsional vibration, and whirling analysis);
- HVAC System Calculations;
- Master Equipment List (DID-ILS-001);
- Hazardous Materials Database (DID-ILS-002);
- Maintenance Analysis Report (DID-ILS-004);
- Recommended Spare Parts List (DID-ILS-005); and
- Training Plan (DID-T-001).

Remarks:

- 3.0 The Contractor shall submit calculations and data to the Technical Authority (TA) that demonstrates that the design and the selected equipment and components satisfy the intent of the SRD of Annex A;
- 4.0 The Contractor shall submit a Schedule of Deck Coverings with samples of coverings from which the Technical Authority can make specific selections;
- 5.0 The Contractor shall submit a Piping Schedule that provides details of components and isolation to minimize galvanic corrosion;
- 6.0 The Contractor shall submit a Painting Schedule for the vessels based on CFTO D-23-003-005/SF-002, The Preservation and Painting of HMC Vessels, to the TA for comment;
- 7.0 A schedule of all cables fitted, listing type, voltage and temperature rating, number and size of conductors, current rating, identification number, and weight per metre shall be submitted to TA;
- 8.0 The Contractor shall submit intake and exhaust pressure drop calculations to demonstrate that the proposed design shall conform to engine manufacturer's minimum and maximum pressure limits.
- 9.0 HVAC system calculations shall be submitted to demonstrate compliance with the SRD of Annex A. The calculations shall include:
 - (a) individual compartment heating and cooling summary sheets (for each compartment);
 - (b) itemized list of all heating & cooling loads;
 - (c) ventilation ductwork sizing/pressure drop calculations;
 - (d) itemized list of all ventilation pressure losses;
 - (e) The Contractor shall size ducts appropriate to noise requirements, airflow balancing requirements, and fan selection requirements.
- 10.0 If a Cold Water System is fitted, relevant supporting calculations shall be submitted, including:

(a) Cold Water piping sizing/pressure drop calculations; and

(b) Itemized list of all Cold Water piping pressure losses.

11.0 The complete hydraulic system, including all hydraulic controls, pumps, tanks, magnetic and micron filters, coolers, and interconnecting piping shall be the sole responsibility of the Contractor. This Contractor shall liaise with all relevant equipment suppliers to ensure compatibility of equipment, supervise the installation, flush and clean the system, and deliver the complete system fully tested and operational.

Deliverables:

12.0 One electronic copy of the CDR Design Data Package must be provided by the Contractor 15 calendar days prior to the CDR.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-008 Acoustic Management Report	DATA ITEM NUMBER: DID-E-008
DESCRIPTION/PURPOSE: <p>The purpose of this DID is to define the contents of the report that the Contractor must develop to demonstrate that the Naval Large Tugs will meet the noise criteria specified in the Systems Requirement Document (SRD) of Annex A.</p>	
RELATED DIDS:	REFERENCES: Maritime Occupational Health and Safety Regulations; TP 3685 Standards Respecting Noise Control and Hearing Protection in Canadian Towboats Over 15 Tons, Gross Tonnage; and TP1861.
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Acoustic Management Report can be presented in Contractor developed format but must include text, all supporting calculations and drawings. Remarks: <ol style="list-style-type: none"> 2.0 The Acoustic Analysis Report must serve as the basis, if followed, for the builder to achieve the required habitability noise performance for the Naval Large Tug as specified in the SRD of Annex A. 3.0 As a minimum the report must include: <ol style="list-style-type: none"> a. A listing of the noise sources together with their acoustic characteristics; b. A description of the Noise Model used to determine noise levels throughout the vessel; c. An Indication of the level of noise treatments required; d. Airborne Noise Analysis predictions for all vessels; e. An indication of all spaces where hearing protection will be required; and f. Data and assumptions utilized in the development of the report and the noise control treatments incorporated into the design, as identified through this analysis. 	

- 4.0 Should the machinery, insulation and arrangement be identical to that of the proven parent tug design, items 2 a, 2 b and 2 c above can be substituted by trial data from the proven parent tug demonstrating satisfactory compliance with the noise performance specified in the SRD of Annex A.

Deliverables:

- 5.0 One electronic copy of the Acoustic Management Report must be provided by the Contractor 15 calendar days before the Critical Design Review.
- 6.0 One electronic copy of the Acoustic Management Report must be provided by the Contractor 15 calendar days before the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-009 Structural Adequacy & Vibration Analysis Report	DATA ITEM NUMBER: DID-E-009 electrical
DESCRIPTION/PURPOSE: The purpose of this DID is to define the contents of the report that the Contractor must develop to demonstrate that the structure of the Naval Large Tug's hull and superstructure meets Classification Society Rules, the Systems Requirement Document and is not susceptible to machinery or environmentally induced vibration.	
RELATED DIDS:	REFERENCES: Classification Society Rules
PREPARATION INSTRUCTIONS: Format: 1.0 The Structural Adequacy and Vibration Report can be presented in Contractor developed format but must include text, all supporting calculations and drawings. Remarks: 2.0 The Contractor must assess the hull girder's natural frequencies and address all areas of potential interference with the operation of the vessel and its mission systems, at all potential speeds, during transits and when conducting its various towing evolutions. 3.0 The Contractor must conduct the required vibration analysis to support the proposed design. The analysis must be carried out as required throughout the operating speeds and at speeds corresponding with 100% of rated full power. 4.0 The Contractor must carry out the following mathematical vibration analysis, as required, to support system design: a. In collaboration with the equipment suppliers check the propulsion system to ensure that no torsional vibration which may be damaging to the equipment exists within the operating range and under all conditions of operation. There must be no restricted speed ranges within the operating profile; and b. Modal analysis of all resiliently mounted machinery. Fatigue and modal analysis of all machinery mounted on a sub-base that is resiliently mounted to demonstrate that the design is adequate to avoid any fracture/failure in the sub-base for the entire life of the vessel. 5.0 The Contractor must evaluate the performance of any secondary and tertiary structure in	

accordance with Classification Society Rules for this type of vessel to ensure that there are no adverse impacts with respect to the vessel's operation.

- 6.0 Foundations for rotating or oscillating equipment are to be analyzed. This is to include, but not be limited to, main engines, generators and any other components deemed necessary to be assessed by Class.
- 7.0 Where adverse performance is found, the Contractor must demonstrate the mitigating action taken. In the event that the analysis identifies excessive stresses, or barred speed ranges within normal operational speeds, alternative configurations or equipment must be provided to bring the results to acceptable values.
- 8.0 The Contractor must clearly identify all methodologies, assumptions and limiting states used in the structural analysis.

Deliverables:

- 9.0 One electronic copy of the Structural Adequacy and Vibration Analysis Report must be provided by the Contractor 15 calendar days before the Critical Design Review.
- 10.0 One electronic copy of the Structural Adequacy and Vibration Analysis Report must be provided by the Contractor 15 calendar days before the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-E-010 Acceptance Review Data Package	DATA ITEM NUMBER: DID-E-010
DESCRIPTION/PURPOSE: The purpose of this DID is to define the contents of the data package that the Contractor must develop, deliver and present at the Acceptance Review (AR) for consideration, discussion and agreement prior to Provisional Acceptance.	
RELATED DIDS: DID-M-012 Design Drawings DID-E-001 Weights and Centre of Gravity Report DID-E-002 Trim, Stability and Freeboard Report DID-E-003 Electrical Load Analysis and Report DID-E-008 Acoustic Management Report DID-E-009 Structural Adequacy and Vibration Analysis Report DID-ILS-001 Master Equipment List DID-ILS-002 Hazardous Materials Database DID-ILS-004 Maintenance Analysis Report DID-ILS-005 Recommended Spare Parts List	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The AR Data Package must consist of drawings, reports and analysis as defined in the CDRL. Reports and analysis formats shall be as described in applicable DIDs. Drawings must be produced in accordance with DID-M-012 Design Drawings. Remarks: 2.0 The Contractor must provide, as a minimum, the following information, drawings, calculations, analysis, reports and background material for the AR in addition to those required by other DIDs:	

- Compliance Verification Matrix (DID-CM-001)
- Technical Data Package (DID-ILS-003)
- Weights and Centre of Gravity Report (DID-E-001);
- Trim, Stability and Freeboard Report (DID-E-002);
- Electrical Load Analysis (DID-E-003);
- Acoustic Management Report (DID-E-008);
- Structural Adequacy and Vibration Analysis Report (DID-E-009);
- Dock Test and Trials Reports (DID-TT-001);
- Sea Acceptance Trials Reports (DID-TT-002);
- Inclining Test Report (DID-TT-003);
- Master Equipment List (DID-ILS-001);
- Hazardous Materials Database (DID-ILS-002);
- Maintenance Analysis Report (DID-ILS-004);
- Recommended Spare Parts List (DID-ILS-005); and
- Captain's Ship's Book (DID-ILS-006).

Deliverables:

- 3.0 One electronic copy of the AR Data Package for each vessel must be provided to Canada by the Contractor fifteen (15) calendar days prior to AR for review and acceptance by Canada.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-TT-001 Dock Trial Plan and Procedure	DATA ITEM NUMBER: DID-TT-001
DESCRIPTION/PURPOSE: The purpose of this DID is to define the plan and procedures that the Contractor intends to follow to prepare and conduct the Dock Trials for the Naval Large Tug and its various equipment's and components.	
RELATED DIDS: DID-M-002 Master Plan and Schedule	REFERENCES: Classification Society Rules and Regulations
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Dock Trial Plan and Procedure can be presented in Contractor developed format. 2.0 The Dock Trial Plan and Procedure schedule must be developed in MS Project format. Requirements: <ol style="list-style-type: none"> 3.0 The Dock Trial Plan and Procedure must outline the Contractor's test and trial policy, describing, in general, how tests and trials will be sequenced so that the end result is a vessel which has had every component and system proven as properly installed and functional. 4.0 The Dock Trial Plan and Procedure must give a detailed description of all test and trial stages and which tests and trials will be conducted in those stages, outlining the logic behind the sequencing. 5.0 The Dock Trial Plan and Procedure must describe the structure of the test and trial organization and any responsibility and reporting lines within that structure. 6.0 The Dock Trial Plan and Procedure must describe the conduct of each tests and trial. 7.0 Each Dock Trial Plan and Procedure must provide a purpose for each test or trial, along with the specification requirement/reference it pertains to. 8.0 The Dock Trial Plan and Procedure must provide any prerequisites which must be met prior to conducting each test or trial. 9.0 The Dock Trial Plan and Procedure must outline the conditions or parameters under which each test or trial is to be conducted, including any safety precautions peculiar to that particular test or trial. 10.0 The Dock Trial Plan and Procedure must give details of applicable statutory regulatory requirements 	

to be met for each test or trial and any Class requirements.

11.0 The Dock Trial Plan and Procedure must give a detailed description of the steps required to conduct each test or trial.

12.0 The Dock Trial Plan and Procedure must provide a Record Sheet for each test or trial which must include check-off lists for readings and observations that should be taken during the test or trial and space for recording the readings, observations and data that are collected. The Record Sheet must be appended to each plan and procedure prior to the commencement of the test or trial.

13.0 The Dock Trial Plan and Procedures must include the following as a minimum for each trial:

- a. The list of prerequisite mandatory inspection reports required in order to proceed with the Dock Trial;
- b. The detailed list of supplies and systems required including as applicable:
 - Electrical power supply;
 - Air, fuel, oil and water supplies;
 - Communication systems required; and
 - Alarm & monitoring system communications required.
- c. The list of the personnel required for:
 - Vessel operation;
 - The readings and data collection; and
 - The vessel's lines handling.
- d. The list of the mandatory personnel attendance including as applicable:
 - Canada;
 - Class;
 - Regulatory Bodies;
 - Inspection Authority; and
 - Original Equipment Manufacturer.
- e. The safety requirements onboard and on the pier;
- f. The list of approved test and data sheets to be filled during the trial;
- g. The sequential order and type of trials to be conducted on the equipment and their respective performances to be obtained.

14.0 A schedule must be incorporated into the Dock Trial Plan and Procedures and provide an estimated duration in days for each of the main activities described.

15.0 The davit/crane shall be designed and tested to demonstrate compliance with the following criteria:

a. Static Proof Test

- (i) 2.2 times the maximum working load, except winch brakes.
- (ii) Device to be placed at the full outboard position, proof load shall be swung through an arc of approx. 10 degrees to each side of the vertical in the fore and aft plane.
- (iii) Test shall be done in the upright position, and then in positions simulating shipboard condition of list of 20 degrees both inboard and outboard.

b. Dynamic (Working Load) Test

- (i) Safe Working Load shall be moved from the full inboard to the full outboard.
- (ii) Repeat test (i) with ship under a combined condition of 20 deg. inboard list and 10 deg. trim.
- (iii) Repeat the tests in (i) and (ii) with a mass equal to 1.5 times the Safe Working Load without persons.

c. Winch Test

- (i) Device winch shall be wound to the maximum number of turns, a static test load of 1.5 times the maximum safe working load shall be applied and held on the winch brake for 1 minute, and then lowered for one complete revolution of the winch barrel shaft.
- (ii) Upon completion of test under (i), a test load of 1.1 times the maximum safe working load shall then be lowered at maximum lowering speed through a distance of at least 3 metres and stopped by applying the brake sharply, the test load shall drop no more than 1 metre after applying the brake.
- (iii) The test under (ii) shall be repeated a minimum of three times. If the winch design incorporates an exposed brake, at least one of these tests shall be carried out with the brake wetted, but in this case the stopping distance may be exceeded.

16.0 The rescue boat launching davit/crane shall be tested and certified to ensure the rescue boat shall be safely launched and recovered in accordance with TP 7322 – Standards for Rescue Boats

Deliverables

17.0 One electronic copy of the Draft Dock Trial Plan and Procedure must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.

18.0 One electronic copy of the Final Dock Trial Plan and Procedure must be provided by the Contractor 15 calendar days prior to the Critical Design Review.

19.0 Any changes to the Dock Trial Plan and Procedure must be provided not later than six weeks prior to planned start date of each test or trial.

20.0 Test and Trials Reports must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-TT-002 Sea Acceptance Trials and Procedures	DATA ITEM NUMBER: DID-TT-002
DESCRIPTION/PURPOSE: The purpose of this DID is to define the plan and procedures that the Contractor intends to follow to prepare and conduct the Sea Acceptance Trials for the Naval Large Tug and its various equipment's and components.	
RELATED DIDS: DID-M-002 Master Plan and Schedule	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Sea Acceptance Trials and Procedures can be presented in Contractor developed format. 2.0 The Sea Acceptance Trials and Procedures schedule must be developed in MS Project format. Remarks: <ol style="list-style-type: none"> 3.0 The Sea Acceptance Trials and Procedures must outline the Contractor's trial policy, describing, in general, how trials will be sequenced so that the end result is a vessel which has had every component and system proven as properly installed and functional. 4.0 The Sea Acceptance Trials and Procedures must give a detailed description of all trial stages and which trials will be conducted in those stages, outlining the logic behind the sequencing. 5.0 The Sea Acceptance Trials and Procedures must describe the structure of the trial organization and any responsibility and reporting lines within that structure. 6.0 The Sea Acceptance Trails and Procedure must describe the conduct of each trial. 7.0 The Sea Acceptance Trials and Procedures must provide a purpose for each trial, along with the specification requirement/reference it pertains to. 8.0 The Sea Acceptance Trials and Procedures must provide any prerequisites which must be met prior to conducting each trial. 9.0 The Sea Acceptance Trials and Procedures must outline the conditions or parameters under which each trial is to be conducted, including any safety precautions peculiar to that particular trial. 10.0 The Sea Acceptance Trials and Procedures must give details of applicable statutory regulatory 	

requirements to be met for each trial and any Class requirements.

11.0 The Sea Acceptance Trials and Procedures must give a detailed description of the steps required to conduct each trial.

12.0 The Sea Acceptance Trials and Procedures must provide a Record Sheet for each trial which must include check-off lists for readings and observations that should be taken during the trial and space for recording the readings, observations and data that are to be collected. The Record Sheet must be appended to each plan and procedure prior to the commencement of the trial.

13.0 The Sea Acceptance Trials Plan and Procedures must include the following as a minimum:

- a. The list of prerequisite mandatory inspection reports required in order to proceed with the Sea Acceptance Trial;
- b. The detailed list of supplies and systems required including as applicable:
 - Electrical power supply;
 - Air, fuel, oil and water supplies;
 - Communication systems required; and
 - Alarm & monitoring system communications required.
- c. The list of the personnel required for:
 - The readings and data collection; and
 - The vessel's operations.
- d. The list of the mandatory attendance including as applicable:
 - Canada;
 - Class;
 - Regulatory Bodies;
 - Inspection Authority; and
 - Original Equipment Manufacturer.
- e. The security and safety requirements onboard;
- f. The list of approved test and data sheets to be filled during the trial;
- g. The sequential order and type of trials to be conducted on the equipment and their respective performances to be obtained.

14.0 Based on the Vessel's Sea Acceptance Trial Plan and Procedures, the Contractor must develop and deliver a Sea Trial schedule. The schedule must provide an estimated duration in days of each of the main activities described in the SAT Plan and Procedures.

Deliverables:

- 15.0 One electronic copy of the Draft Sea Acceptance Trials and Procedures must be provided by the Contractor 15 calendar days prior to the Preliminary Design Review.
- 16.0 One electronic copy of the Final Sea Acceptance Trials and Procedures must be provided by the Contractor 15 calendar days prior to the Critical Design Review.
- 17.0 Test and Trials Reports must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-TT-003 Inclining Test Plan and Procedure	DATA ITEM NUMBER: DID-TT-003
DESCRIPTION/PURPOSE: The purpose of this DID is to define how the Contractor must conduct the Inclining Experiment and prepare and deliver the results.	
RELATED DIDS: DID-E-001 Weights and Centre of Gravity Report DID-E-002 Trim, Stability and Freeboard Report DID-M-002 Master Plan and Schedule	REFERENCES: C-03-001-024/MS-003, Canadian Forces Technical Order, Procedures for Conducting Inclining Experiments on Canadian Forces Surface Ships, 15 July 1997
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Inclining Test Plan and Procedure can be in a Contractor developed format. 2.0 The results of the Inclining Experiment and the Derivation of Lightship must be formatted in accordance with the requirements of C-03-001-024/MS-003, Canadian Forces Technical Order, Procedures for Conducting Inclining Experiments on Canadian Forces Surface Ships, 15 July 1997. Remarks: <ol style="list-style-type: none"> 3.0 The Vessel's Inclining Test Plan and Procedures must include the following as a minimum: <ol style="list-style-type: none"> a. The objectives of the tests and the related deliverables subject to the Regulatory Body approval; b. The procedure to be followed in conducting the test; c. How the preparation and conduct of the experiment must be coordinated to ensure the attendance of the DND Technical Authority and the required Regulatory Body. 4.0 The results from the experiment and the derivation of Lightship must be presented in accordance to the requirements of C-03-001-024/MS-003, Canadian Forces Technical Order, Procedures for Conducting Inclining Experiments on Canadian Forces Surface Ships, 15 July 1997. Deliverables:	

- 5.0 One electronic copy of the Test Plan and Procedures must be provided by the Contractor 15 calendar days prior to the Critical Design Review.
- 6.0 One electronic copy of the Inclining Report and the Derivation of Lightship must be delivered 15 Calendar Days before the start of Sea Trials.
- 7.0 Inclining Report must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-001 Master Equipment List	DATA ITEM NUMBER: DID-ILS-001
DESCRIPTION/PURPOSE: The purpose of this DID is to define the list that the Contractor must produce that will identify to Canada the equipment that has been selected in the design and construction of the Naval Large Tugs and which must subsequently be used as an integral part of their in service support.	
RELATED DIDS: DID-E-001 Weights and Centre of Gravity Report DID-ILS-004 Maintenance Analysis Reports	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The specific format of the Master Equipment List (MEL) must be developed by the Contractor and agreed to by Canada. Remarks: 2.0 The MEL should be structured in accordance with the Work Breakdown Structure used for the Naval Large Tug's Weight and Centre of Gravity Report (DID-E-001) and must identify for each piece of machinery or equipment: a. Unique ID Number; b. Equipment Nomenclature, description; c. Work Breakdown Structure number; d. Make; e. Model; f. Capacity and / or rating; g. Quantity; h. Serial Number;	

- i. Nameplate Data;
 - j. Manufacturer's Name and Address; and
 - k. The Regulatory Body Certificates (if applicable).
- 3.0 The following Original Equipment Manufacturer Warranty information must be provided:
- a. Coverage;
 - b. Terms; and
 - c. Start and End Date.
- 4.0 The MEL must identify the equipment forming part of the systems listed below:
- a. Main propulsion system, including:
 - Engines and associated systems;
 - Shaftline and components; and
 - Gearbox.
 - b. Electrical power generation and distribution system, including:
 - Service Switchboards;
 - Emergency Switchboard;
 - Distribution Systems; and
 - Electrical Power Conversion Equipment.
 - c. Auxiliary systems, including:
 - Bilge System;
 - Fuel Oil Handling System;
 - Hydraulic Power System(s);
 - Heating and Air Conditioning Systems;
 - Firefighting system; and
 - Ventilation Systems.
 - d. Navigation system;
 - e. Steering system;
 - f. Machinery control system, including:

- Propulsion Machinery Control and Monitoring System;
- Electrical Power Generation Control and Monitoring System;
- Bridge Controls.

g. Primary communication system;

h. Internal Communication Systems; and

i. Electronic Navigation Systems.

The Master Equipment List must identify all components, sub-assemblies and parts down to the lowest repairable level as identified in the Maintenance Analysis Reports (DID-ILS-004).

Deliverables:

- 5.0 One electronic copy of the proposed content of the MEL, in terms of systems/equipment to be included, must be delivered 15 calendar days before the Critical Design Review.
- 6.0 One electronic copy of the MLE must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.
- 7.0 One electronic copy of the final updated MEL must be provided on delivery of each vessel.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-002 Hazardous Material Database	DATA ITEM NUMBER: DID-ILS-002
DESCRIPTION/PURPOSE: The purpose of this DID is to define the required content of the database that the Contractor must provide that will demonstrate to Canada that the Naval Large Tug's complies with the requirements for an Inventory of Hazardous Material.	
RELATED DIDS:	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Hazardous Material Database must be provided by the Contractor as an electronic spreadsheet or database. 2.0 The Contractor must provide a Digital Versatile Disc (DVD) containing current copies of the Material Safety Data Sheets (MSDS) for all material/controlled products used on the vessels. The MSDS must be provided in both official languages. Remarks: <ol style="list-style-type: none"> 3.0 Where feasible, alternatives to the Ionisation Type smoke detector shall be used. The Contractor shall duly record any sealed radioactive nuclear substance contained in any detector in the Ship Hazardous Material (SHM) Database. Firefighting extinguishing compounds, except water, shall be identified in the SHM Database. 4.0 The Hazardous Material Database must contain the following information: <ol style="list-style-type: none"> a. Where there are no acceptable alternatives to mercury, the application, location and detailed information on the product where it is used; b. Where regulated Halocarbons are used, the application, location and detailed information on the products where they are used; c. Where radioisotopes are incorporated into or used on the vessel; and d. Where the antifouling coating used on the underwater hull is regulated by Health Canada under the Pest Management Review Agency, the Antifouling coating product name, quantity used, and its registration number. 	

5.0 The Hazardous Material Database must contain the following statements:

- a. A statement of the known hazardous material condition in the vessel;
- b. PCB Statement - certification that the vessels do not contain PCBs;
- c. Asbestos Statement - certification that the vessels do not contain asbestos;
- d. Cadmium Statement - certification that the vessels do not contain cadmium; and
- e. Ozone Depleting Substances Statement - certification that the vessels do not contain Ozone Depleting Substances.

Deliverables:

- 6.0 One electronic copy of the Hazardous Material Database must be delivered 15 calendar days before the Critical Design Review.
- 7.0 One electronic of the Hazardous material Database must be provided by the Contractor 15 calendar days prior to the Acceptance Review of each vessel as part of the Acceptance Review Data Package.
- 8.0 One electronic copy of the Hazardous Material Database and the MSDS must be provided on delivery of each vessel.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-003 Technical Data Package	DATA ITEM NUMBER: DID-ILS-003
DESCRIPTION/PURPOSE: The purpose of this DID is to define the package of information (technical data, drawings, manuals and other supporting documentation) that the Contractor must provide to support each Naval Large Tug (NLT) during its operational life cycle.	
RELATED DIDS: DID-E-007 Critical Design Review Data Package DID-ILS-001 Master Equipment List DID-M-012 Design Drawings	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Technical Data Package (TDP) must be delivered in both the native file format of each original deliverable (where available) and in Portable Document Format (PDF). 2.0 Drawings s must be in accordance with industry standards, and must be produced in accordance with DID-M-012 Design Drawings. 3.0 The following publications must be developed in both official languages: a. Trim, Stability and Freeboard Report (Trim and Stability Book); b. Inclining Report; c. Light Ship Check; d. Propulsion System Operation and Maintenance Manual including text, figures and illustrations; e. Electrical System Operation and Maintenance Manual including text, figures and illustrations; f. Auxiliary System Operation and Maintenance Manual including text, figures and illustrations; g. Shipboard Plans for Fire Protection Appliances, Life-Saving Appliances and Means of Escape; and h. Damage Control Plan (Incident Board) and Damage Control Booklet.	

- 4.0 Manuals provided by the Original Equipment Manufacturer (OEM) for commercial-off the-shelf equipment, machinery and appliances installed on the vessels must be indexed by the Contractor and be preferably in both official languages.
- 5.0 The Technical Manuals must be presented in book form, including text, figures and illustrations.
- 6.0 Units used in all main documentation deliverables (manuals, systems drawings, equipment drawings, etc.) shall use ASHRAE standard S-I Units. Units shall be consistent throughout all documents (e.g., units for airflow shall be the same in the manual, the ship system drawing and the fan equipment drawing).

Remarks:

- 7.0 The TDP Package must consist of as-fitted drawings, equipment operating manuals, equipment maintenance manuals and drawings for maintenance, repair and overhaul of the vessels.
- 8.0 The TDP drawings and calculations must be those listed in DID-E-007 Critical Design Review Data Package but updated to reflect the actual configuration of each vessel at acceptance. The As-Fitted Drawing Package must be sufficiently detailed so as to allow Department of National Defence (DND) to operate, maintain, repair, overhaul, refit, support, and control the configuration of the NLT and its systems and equipment throughout the NLT's in-service life.
- 9.0 In addition, the As-Fitted Drawing Package must be sufficiently detailed so as to allow DND to fabricate for repair, or to purchase, items that are equivalent to those being delivered. It must include:
 - a. Details of special processes essential to procurement and/or installation;
 - b. Performance ratings;
 - c. Dimensional and tolerance data;
 - d. Input and output parameter tolerances;
 - e. Diagrams;
 - f. Mechanical and electrical connections;
 - g. Physical characteristics including fit, form and finish;
 - h. Details of material identification, inspection, test and evaluation criteria; and
 - i. Necessary calibration information and quality control data.
- 10.0 For the As-Fitted drawings, an index must be provided, including the drawing title, drawing number and designator indicating the Work Breakdown Structure (WBS) group. The index must be cross referenced by drawing title, WBS group, and drawing number.
- 11.0 If Classification Society or Regulatory Body approvals are required, they must be stamped on the drawing.
- 12.0 Each As-Fitted drawing in the As-Fitted Drawing List must be created to represent the entire class of vessels (e.g. one general arrangement drawing representing all vessels within that class). Any authorized exceptions to, or departures from, the class technical baseline will be annotated as an exception to the baseline. In this way, a baseline for the class will be established and any changes

pertaining to individual vessels will be identified.

13.0 The Technical Manuals must describe the vessel, the general layout of each deck and the vessel's design and performance characteristics. Subsequent chapters must provide details regarding each of the major systems, including:

- a. A detailed description of the system and its component elements, with illustrations as required.
- b. System Description shall include a narrative description, system block diagram, equipment breakdown structure, and supporting data (for example, line drawings, photographs, data tables, etc.) Include theory of operation for the system;
- c. System operating procedures, including both normal operations and emergency procedures. System operation must include initial adjustments, pre-start checks, starting procedures, normal operating procedures, special and emergency procedures, shut down procedures, lay-up instructions, as applicable;
- d. Illustrated schematics of each system identifying all equipment; and
- e. A summary of maintenance actions to be performed by the operating crew including ship system layup (Hot and Cold), winterization and season start up preventative maintenance instructions. Troubleshooting data including possible malfunctions, causes, effects and solutions.

14.0 The TDP must include Manuals (operating, maintenance), instruction books and other data for all major systems (complete propulsion plant including gearbox, electrical plant including battery charging system, control system, and instrumentation), machinery and equipment (winches, pumps, heaters, fans, cooking appliances, navigating appliances, all the radio equipment, etc.) and must contain the following information:

- a. Complete description of the unit;
- b. Sufficient data, including installation criteria and drawings, to permit installation, adjustment, and testing;
- c. Operating instructions including:
 - Daily user check and operation procedure;
 - Operating detail of each system; and
 - Emergency operation procedure.
- d. Maintenance and overhaul instructions that include recommended routine and planned maintenance schedule, special instructions for disassembly and assembly with illustrations, clearances and alignments to be checked, trouble shooting procedures, use of special tools and test equipment required for servicing;
- e. scheduling information such as: schedule type (i.e. calendar, hours, cycles); task frequency or interval; time required; maintenance window (i.e. related tasks, resource consolidation) and seasonal considerations;
- f. Instructions or steps required to accomplish the Maintenance Task including reference to applicable technical data (i.e. troubleshooting procedures, assembly instructions, drawings)

identified by name and OEM reference number, the estimated required level of effort in hours. Details such as equipment removal routes and lifting points must also be provided where applicable;

- g. safety issues related to maintenance tasks must be identified such as lock out and/or tag out, entry to confined spaces and HAZMAT;
- h. Identify all parts and consumables required to perform the maintenance task. The location (onboard stores or shore based spares) of these spares is to be identified;
- i. Describes the conditions under which the maintenance task must be performed, such as: identification of the Level and Line, see A2.1.3 herein, whether dry-docking is required and all specific operating conditions of the equipment;
- j. Special Test and Tool Equipment required must be identified along with all task specific instructions if applicable;
- k. Environmental issues related to maintenance task must be identified;
- l. Diagnostic Data that includes symptoms, possible causes, fault isolation techniques at the system level (equipment level diagnostic data must be provided in OEM manuals)
- m. Basic operating characteristics (temperature, pressure, air flow rate, etc.); and
- n. Operating and maintenance instructions.

15.0 The Technical Manual must include, as a minimum, the following systems:

General Information and ship layout (ship level) ;

- Main Propulsion System;
- Key safety features;
- Lifesaving equipment;
- Stability (based on the trim and stability booklet);
- Environmental protection features;
- Electrical Generation and Distribution System;
- Fuel Storage and Transfer System;
- Compressed Air System;
- Steering System;
- Propulsion and Machinery control System;
- Fire Fighting System;
- Bilge Suction System;

- Navigation Systems;
- Bridge Control;
- Internal Communications System;
- External Communications System;
- Heating, Ventilation & Air Conditioning System;
- Deck Machinery;
- Hull Structure and Fittings;
- Fresh Water System;
- Science equipment including science electronics;
- Auxiliary equipment and control; and
- Fitted deck equipment (including anchor windlass, cranes, davits).

16.0 The Contractor must provide Technical Manuals that are separately compiled, indexed, and bound between hard covers under Propulsion, Electrical/Electronic, and Auxiliary/Outfit headings.

17.0 Technical Manuals must have a unique identifier, be revision controlled and indicated accordingly on the publication with a method approved by Canada.

18.0 The Technical Manuals must consist of commercial equipment manuals, primary OEM drawings, service parts lists, and supplemental data for each equipment installed on the Naval Large Tug.

19.0 The information must include:

- a. Assembly and disassembly instructions with comprehensive illustrations showing each step;
- b. Recommended planned maintenance;
- c. Complete troubleshooting procedures;
- d. Basic operating characteristics (such as temperatures, pressures, and flow rates);
- e. Installation criteria and drawings;
- f. Complete illustrated parts lists;
- g. Operating and maintenance instructions.

20.0 The TDP must include any certificate of approval by the appropriate authority for all the equipment, machinery and appliances installed on the vessels.

21.0 The TDP must include certificates for the lights, shapes, and sound signals required by the Collision Regulations.

22.0 The Contractor shall provide a fire control plan and other safety drawings in both official languages

permanently exhibited for ship staff. Confirm boards to be provided.

Deliverables

23.0 One electronic copy of the TDP must be provided 15 cd prior to Acceptance Review for each vessel as part of the Acceptance Review Data Package.

24.0 One electronic copy of the TDP Manuals must be provided two months before delivery of each vessel and drawings three weeks before delivery of each vessel. The TDP shall be provided on CD-ROM.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-004 Maintenance Analysis Reports	DATA ITEM NUMBER: DID-ILS-004
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of the reports that the Contractor must produce to identify critical systems and equipment, establish maintenance cycles, list maintenance activities and related support requirements for the Naval Large Tug (NLT).	
RELATED DIDS: DID-ILS-005 Recommended Spare Parts List	REFERENCES:
PREPARATION INSTRUCTIONS: Format: 1.0 The Maintenance Analysis Reports can be presented in Contractor developed format. Remarks: 2.0 A Maintenance Analysis Report must be generated by the Contractor for all systems, sub-systems, equipment or components identified in the Master Equipment List and deemed necessary for the safe, efficient and legal operation of the vessel. This must include any item that can impact vessel operation, safety or environmental performance adversely, likely to burden on-board maintenance resources in order to repair and any item that is likely to require a significant proactive maintenance program to keep it functional. 3.0 The Maintenance Analysis Reports must be generated using the Reliability Centered Maintenance methodology using a "top down" and functional approach developed to support the NLT operation over a 60-month refit-to-refit maintenance cycle. 4.0 Reliability and maintenance data such as hours between oil and filter changes, and hours between overhaul, and mean time between inspections shall be provided. 5.0 The Maintenance Analysis Report must: a. Identify the system, sub-system, equipment item or component under analysis; b. Include a summary description of the concept of maintenance determined through analysis for the system, sub-system, equipment item or component under analysis. The summary for each hierarchical level must reflect the analyses of each subordinate level. Each summary must confirm or suggest needed modifications to the notional maintenance cycle and / or the concept of support;	

- c. Include supporting calculations as applicable and include line by line (failure mode by failure mode) a preliminary list of critical Integrated Logistic Support elements that must be required to execute the strategies identified including:
- Spare parts, materials, consumables and other items;
 - New skills or knowledge that must require training for DND personnel;
 - Tools, test equipment and support equipment not otherwise identified and included either in the design or shore based support facilities; and
 - Technical documentation, drawings, schematics, instrument loop diagrams, etc. that may be required.
- d. Include a Failure Mode and Effects Analysis (FMEA) and Decision Logic used to arrive at maintenance and other failure management strategies resultant from the analysis including proactive and corrective actions, task frequencies and who should carry out those actions (e.g. ship or shore based personnel);
- i. The FMEA shall be conducted in accordance with International Code of Safety for High-Speed Craft, 2000 Annex 4 Procedures for Failure Mode and Effects Analysis, and to a standard to the satisfaction of a classification society for the following ship systems:
 - Main propulsion system;
 - Ship service electrical power generation and distribution system;
 - Navigation and communication systems;
 - Machinery control system; and
 - Damage control system.
 - ii. The FMEA shall demonstrate that the vessel's systems are not rendered inoperable due to a single critical failure (single point of failure shall be compensated for by redundancy or alternate operating procedure that will prevent the loss of the system in the event of failure).
 - iii. The FMEA shall identify tests and trials necessary to support the conclusions on the analysis.

Deliverables:

- 6.0 One electronic copy of the Maintenance Analysis Reports must be provided by the Contractor 15 calendar days prior to the Critical Design Review.
- 7.0 One electronic copy of the Maintenance Analysis Reports must be provided by the Contractor 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.
- 8.0 One electronic copy of the Maintenance Plan must be provided on delivery of each vessel.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-005 Recommended Spare Parts List	DATA ITEM NUMBER: DID-ILS-005
DESCRIPTION/PURPOSE: The purpose of this DID is to define the contents of a list that the Contractor must provide that will establish the recommended spare parts that should be provided with each Naval Large Tug (NLT) to support its ongoing regular maintenance.	
RELATED DIDS: DID-ILS-004 Maintenance Analysis Reports	REFERENCES: TCMS Classification Society Rules
PREPARATION INSTRUCTIONS: Format: 1.0 The specific format of the Recommended Spare Parts List (RSPL) must be developed by the Contractor in tabular format and agreed to by Canada. Remarks: 2.0 The Contractor must compile a list of spare parts, including on-board spares, shore based spares, long lead spares, special tools and test equipment based on the Maintenance Analysis Report, the requirements of the Regulatory Body and equipment manufacturer's recommendations. 3.0 The Recommended Spare Parts List must provide a complete list of all required spares, both repairable and consumable, and must include those recommended to be procured at the time of equipment purchase. 4.0 All on board spares required by TCMS, Class, and/or the Original Equipment Manufacturer, complete with a rationalized quantity of shore based spares sufficient to support the first, second and third levels maintenance for a sixty (60) month operation cycle for all systems and equipment including all special tools and test equipment must be listed in the RSPL. The RSPL must indicate which spares, required by TCMS, Class and/or OEM, are considered long lead spares. 5.0 The Contractor must provide an onboard storage layout plan for spare and repair parts, and all other materiel stored on-board. The plan must outline all special packaging and storage requirements, conditions and maintenance that may apply to spares and repair parts stored on-board and shore based. 6.0 The RSPL must indicate spares required for a sixty (60) day cycle sufficient to support preventative	

maintenance by 1st line personnel.

7.0 The Consolidated Spare Parts list must identify:

- a. Item Name;
- b. Manufacturer's Name;
- c. Manufacturer or Supplier Contact Information;
- d. Manufacturer's Part Number;
- e. Manufacturer's Address;
- f. Quantity Recommended;
- g. Unit of Issue; and
- h. Unit Price.

8.0 A complete list of all tools, test and support equipment, interconnect devices, handling equipment, maintenance stands, and other unique items that are required to conduct maintenance for each item on the list is also to be provided and include the following:

- a. Tool/equipment description, name and unique item identification if applicable;
- b. Maintenance action associated with the stated tool/equipment;
- c. Applicable system, subsystem and equipment; and
- d. Unit price.

9.0 The Recommended Spare Parts List, and the associated tools, test and support equipment required, must indicate the quantity recommended onboard and ashore to support the NLT maintenance profile.

Deliverables:

10.0 One electronic copy of the Recommended Spare Parts List must be provided by the Contractor 15 calendar days prior to the Critical Design Review.

11.0 One electronic copy of the Recommended Spare Parts List must be provided 15 calendar days prior to Acceptance Review for each vessel as part of the Acceptance Review Data Package.

12.0 One electronic copy of the Recommended Spare Parts List must be provided on delivery of each vessel.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-ILS-006 Captain's Ship Book	DATA ITEM NUMBER: DID-ILS-006
DESCRIPTION/PURPOSE: The purpose of this DID is to define the content of a book that the Contractor must provide that contains all legal documents required for each Naval Large Tug's operation.	
RELATED DIDS: DID-ILS-002 Hazardous Materials Database	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 Copies of, or the original, certificates for all the equipment, machinery and appliances installed on the vessels bound and indexed by the Contractor. Remarks: <ol style="list-style-type: none"> 2.0 The Captain's Ship Book must contain all legal documents required for the vessel's operation and must include the following: <ol style="list-style-type: none"> a. Table of contents that lists the certificates and reports held therein; b. Acceptance Certificate; c. Vessel's principal dimensions and operational characteristics; d. Total number of officers and crew accommodated; e. Tonnage Certificates; f. Classification Society Ship Inspection Certificate; g. Report of Inspection; h. Lists of navigation lights, not under command lights, emergency navigation, lights and stowage; i. The Statement of Metacentric Height; j. Docking Plan (docking report, propellers, U/W fittings); 	

- k. Fuel consumption with speed particulars;
- l. Anchoring system certificates;
- m. Lifting appliances test certificates;
- n. Statement of structural integrity, if any;
- o. Full power trials report performance data;
- p. Machinery Certificates (Engine emission, waste water treatment system, oily water separator, etc.);
- q. Radiation and other safety related hazards;
- r. Statement of anti-fouling paint used;
- s. Antifouling Coating certificate;
- t. Radio facilities (list) and Radio certificate;
- u. Radioactive prescribed substance licenses; and
- v. Any other certificates as deemed appropriate.

Deliverables:

- 3.0 One electronic copy of the Captain's Ship's Book must be provided 15 calendar days prior to the Acceptance Review for each vessel as part of the Acceptance Review Data Package.
- 4.0 One hard and on electronic copy of the Captain's Ship's Book must be provided on delivery of each vessel.

DATA ITEM DESCRIPTION (DID)	
TITLE: DID-T-001 Training Plan	DATA ITEM NUMBER: DID-T-001
DESCRIPTION/PURPOSE: The purpose of this DID is to define the plan that the Contractor has developed for the content and conduct of the Crew Familiarization and Operator and Maintenance Personnel Training.	
RELATED DIDS: DID-ILS-001 Master Equipment List	REFERENCES:
PREPARATION INSTRUCTIONS: Format: <ol style="list-style-type: none"> 1.0 The Training Plan can be in a Contractor developed format. 2.0 All Contractor supplied training and the training material must be provided in English and French. Remarks: <ol style="list-style-type: none"> 3.0 Reference libraries of all hard and soft copies of all training courseware (lessons, presentation materials, manuals, etc.) shall be provided to Canada. 4.0 The Training Plan must meet both the system operation and system maintenance requirements to a level suitable for operators, on board maintenance performed by the ship's crew and shore based maintenance that may require the presence of a Field Service Representative. 5.0 The Contractor must prepare and produce a Training Plan for the courses in accordance with best current industrial practices and details of this Statement of Work. 6.0 The Training Plan must define and describe in appropriate detail all aspects of how the Contractor will effectively deliver training. 7.0 The Training Plan must be developed with input from Canada in terms of scheduling and preferred topics and be consistent with the Technical Manuals. Canada must identify personnel for this activity. 8.0 The Training Plan must, at a minimum, include: <ol style="list-style-type: none"> a. Training topics; b. Training location(s) for each training topic; c. Training duration for each training topic; 	

- d. Intended audience for each specific training topic;
- e. Lesson plan(s) for each training topic;
- f. Identification of the instructor(s) for each training topic; and
- g. A Trainee Guide for each topic. The trainee guide must include, as a minimum:
 - Applicable sections of approved technical manuals;
 - Selected ship construction/equipment drawings, where relevant;
 - A copy of presentations, narrative descriptions, diagrams, sketches, charts, graphs, pictures, and other material utilized to support the information presented in the course;
 - Start-up, operation, and shutdown procedures for equipment discussed; and
 - Basic daily maintenance, operation and troubleshooting for primary equipment and systems.

9.0 The Training Plan must provide an agenda and proposed schedule for the proposed training.

10.0 Familiarization and equipment training shall comprise practical exercises supplemented with classroom seminars;

11.0 The Training Plan must include, as a minimum, the following specific items:

- a. Overview of the vessel and its systems including key design features and key safety features;
- b. Propulsion system;
- c. Machinery control system including operations, constraints and recommended practices;
- d. Electrical generating system and distribution system including emergency operations;
- e. Auxiliary equipment and control;
- f. Bridge control and navigation workstation;
- g. Steering system;
- h. Navigation electronics;
- i. Communication electronics (internal and external);
- j. Upper deck equipment and winches (including anchor windlass, towing winches, cranes, davits, etc.);
- k. Towing operations;
- l. Cold move operations;
- m. Stability including loading conditions and tank arrangement; ;

- n. Lifesaving equipment and damage control systems (on board);
- o. Fuelling and ballasting systems and equipment;
- p. Harbour firefighting (fire-fighting systems, equipment and consoles); and
- q. Environmental protection features.

Deliverables:

- 12.0 One electronic copy of the Training Plan must be provided to Canada 15 calendar days before the Critical Design Review for review and acceptance.

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ANNEX A

SYSTEM REQUIREMENTS DOCUMENT

FOR THE

NAVAL LARGE TUG PROJECT

ID	
NLTP -1	1 GROUP 0 - GENERAL GUIDANCE & ADMINISTRATION
NLTP -12	1.1 000 - GENERAL GUIDANCE & ADMINISTRATION
NLTP -176	1.1.1 000.1 General Instructions
NLTP -390	The intent of this System Requirements Document (SRD) is to define the requirements for the design, construction and outfit of a new class of Naval Large Tugs (NLTs) for use by the Queen’s Harbour Master in HMC Dockyards Halifax and Esquimalt.
NLTP -391	Within this document, the words “must”, “will” or “shall” are to be considered synonymous with essential. The stipulation of an essential criterion presumes that it is “achievable at reasonable cost”.
NLTP -392	For the purpose of this SRD, an Essential Requirement is a baseline against which any alternative proposal is to be measured before it is considered for selection. The Crown will exercise the right to assess the degree to which the proposed system or vessel design meets the overall operational requirement.
NLTP -393	In the event of any conflict between the documents referenced in the SRD and the SRD itself the SRD text must take preference, except for Transport Canada Regulations where the SRD requirement is below the regulation, the regulation takes preference.
NLTP -394	This SRD is formatted in accordance with the Work Breakdown Structure (WBS)for Canadian Forces Ships and Submarines (CFTO D-03-003-024/SG-001). SWB Group 0 provides general guidance on the required performance of the vessel, its overall configuration and the characteristics of its various systems. SWBS Groups 1 though 7 provides details, on an element by element basis, of specific additional requirements for each system.
NLTP -177	1.1.2 000.2 General Naval Large Tug Description
NLTP -395	Two NLT's are required on each coast for a total of four vessels for this procurement.
NLTP -396	The NLT's are to be of a common, proven parent design and have Regulatory Body Certification.
NLTP -397	The NLT's are to be designed to provide sufficient capability to the Queen’s Harbour Master in HMC Dockyards Halifax and Esquimalt to support all projected naval operations. Their primary role will be to effect harbour berthing operations, harbour fire protection, coastal towing, and various naval fleet support duties.
NLTP -398	The tugs will be owned and maintained by DND They will be home-ported in their respective HMC Dockyards. They will be operated as Canadian Forces Auxiliary Vessels (CFAVs), will be crewed by civilian personnel and will provide reasonable, timely fleet support, to each QHM on a 24/7 basis.
NLTP -13	1.2 040 - SHIP SYSTEM MANAGEMENT

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NLTP -59	1.2.1 041 Project Management
NLTP -179	<i>1.2.1.1 041.2 Parent Proven Design</i>
NLTP -402	The NLT shall be developed from a parent design currently in satisfactory operation for a minimum of 1,000 cumulative operating hours.
NLTP -403	The parent design shall be operating successfully, or shall have operated successfully, in a coastal maritime environment.
NLTP -404	The parent design, with all the modifications required, must meet this System Requirements Document (SRD).
NLTP -405	The hydrodynamic and maneuvering characteristics of the parent design must be known and documented and capable of being demonstrated by sea trials.
NLTP -60	1.2.2 042 General Administrative Requirements
NLTP -181	<i>1.2.2.1 042.1 Applicability Dates</i>
NLTP -414	Unless otherwise stated in this document, standards and Regulatory Body Rules referenced herein are to be taken as those identified as current upon Contract Award.
NLTP -415	Unless otherwise stated in this document, legislation, regulations or international guidelines referenced herein are to be taken as those identified as expected to be in force upon the projected date of "keel laying" of the first of class vessel.
NLTP -182	<i>1.2.2.2 042.2 Regulatory Body Rules and Regulations</i>
NLTP -416	The vessel shall be classed as: American Bureau of Shipping "Maltese Cross" A1 Tug, Firefighting F1, LMC, UMS or the equivalent notations from another Class Society recognized under Transport Canada's Delegated Statutory Inspection Program.
NLTP -417	The vessels shall be designed in accordance with the Class requirements and built under supervision of the Classification Society which shall be a member of:" - The International Association of Classification Societies (IACS)," and - The Classification Society shall be recognized in accordance with TP 13585 Marine Compliance and Enforcement Manual, i.e. hold a valid Authorization Agreement with Transport Canada and be recognized by the Minister to perform inspection and certification services on their behalf.
NLTP -418	It is not intended to enroll the vessel in the Delegated Statutory Inspection Programme. However, the process of TP 13585 shall be utilized and Classification Society in place of Transport Canada Marine Safety shall perform the inspection and certification required by Statute, Regulation or Convention in accordance with the process as outlined in TP 13585 Delegated Statutory Inspection Programme.
NLTP -419	Accommodation and work spaces shall comply with the Canada Labour Code and TC Towboat Crew Accommodation Regulations.
NLTP -420	The tugs shall be designed to meet the requirements of MARPOL 73/78, and shall be designed for operation within the limit of Canada Shipping Act, Near Coastal Voyage Class 2.

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NLTP -421	<p>The new tug shall:</p> <ul style="list-style-type: none"> - be registered in Canada in accordance with the provisions set forth in Part 2 of the Canada Shipping Act 2001 (CSA 2001). - meet Transport Canada standards and the Classification Society certification requirements; - satisfy all existing and forecasted (at time of contract award) Canadian statutory regulations and requirements that pertain to shipping; and - meet environmental regulations in force at time of contract award.
NLTP -183	<i>1.2.2.3 042.3 Firefighting</i>
NLTP -422	<p>The tug shall be fitted with the requisite equipment to conform to FiFi 1 or equivalent notation of the Regulatory Body.</p>
NLTP -184	<i>1.2.2.4 042.4 Human Engineering</i>
NLTP -423	<p>The following industry standards and recommendations relating to human factor shall be used for the design of vessels, systems, subsystems, and equipment to ensure effectiveness, efficiency, safety and accessibility for the operation and maintenance of the vessels, where applicable:</p> <ul style="list-style-type: none"> - ASTM F1166-07 Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities; - IMO MSC/Circ.982 Guidelines on Ergonomic Criteria for Bridge Equipment and Layout.
NLTP -185	<i>1.2.2.5 042.5 Noise and Vibration</i>
NLTP -341	<i>1.2.2.5.1 042.5.1 Noise</i>
NLTP -424	<p>The airborne noise in any normally manned ship compartments, accommodation, and at manned deck stations with normal propulsion, auxiliary and with all mission related equipment in the spaces running simultaneously at the rated operating level, and the vessel sailing at full speed ahead without requiring personnel to use additional Personal Protective Equipment (PPE) shall meet the following requirements:</p> <ul style="list-style-type: none"> - Maritime Occupational Health and Safety Regulations; - TP 3685 Standards Respecting Noise Control and Hearing Protection in Canadian Towboats Over 15 Tons, Gross Tonnage; and - The noise level at listening posts shall be in accordance with TP1861.
NLTP -342	<i>1.2.2.5.2 042.5.2 Vibrations</i>
NLTP -425	<p>To ensure safety, operational proficiency and comfort of the crew, the vibration levels of the vessel, without requiring personnel to use additional Personal Protective Equipment (PPE), shall be to Classification B (Crew Accommodation Area) to ISO 6954 Mechanical Vibration – Guidelines for measurement, reporting and evaluation of vibration regard to habitability on passenger and merchant ships.</p>
NLTP -186	<i>1.2.2.6 042.6 Safety</i>

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NLTP -426	<p>The tugs shall:</p> <ul style="list-style-type: none"> - comply with Transport Canada, SOLAS, and the Classification Society ship/vessel safety as well as the Canada Labour Code and TC Towboat Crew Accommodation Regulations; and - comply with TC policy on ionizing and non-ionizing radiation and material hazards. - SOR/86-304, Canada Occupational Health and Safety Regulations. - R.S.C., 1985, c. L-2, Canada Labour Code Part II, Occupational Health and Safety.
NLTP -187	<i>1.2.2.7 042.7 Structural Details</i>
NLTP -427	Structural details shall be designed in accordance with ASTM F1455 Standard Guide for Selection of Structural Details for Ship Construction.
NLTP -188	<i>1.2.2.8 042.8 Exhaust Emissions</i>
NLTP -428	The diesel engine exhaust emissions using the Naval Distillate Fuel shall comply with the requirements of MARPOL 73/78 Annex VI Regulations for the Prevention of Air Pollution from Ships and NOX/SOX Technical Code.
NLTP -189	<i>1.2.2.9 042.9 Electrical Installations</i>
NLTP -429	<p>Electrical systems and equipment installed on the vessels shall be designed and installed in accordance with the latest versions of the following;</p> <ul style="list-style-type: none"> - TP127 Ship Safety Electrical Standards; - IEEE Std 45 Recommended Practice for Electric Installation on Shipboard; and - The standards of a classification society. - TP 1861 Standards for Navigation Lights, Shapes, Sound Signals Appliances and Radar Reflectors. - IEC Publication 60092 “Electrical Installations in Ships”
NLTP -430	All electrical equipment, fixtures, cables, fittings, etc. shall be suitable for continuous operation in a marine environment and be manufactured in accordance with international or national standards.
NLTP -431	Electrical appliances shall comply with the standards of the Canadian Standard Association for equipment manufactured in Canada or other national/international standard equivalent to the Canadian Standard Association standard for equipment manufactured outside Canada.
NLTP -1969	<p>The electrical equipment and installations on board ship shall be such that:</p> <ol style="list-style-type: none"> (a) the services essential for safety shall be maintained under various emergency conditions; and (b) the ship and all persons on board are protected against electrical hazards in accordance with the requirements of these Standards
NLTP -190	<i>1.2.2.10 042.10 Radio Communication and Navigation</i>
NLTP -432	The radio communications equipment shall be located and installed in accordance with the most recent version of Ship Station (Radio) Technical Regulations and Ship Station (Radio) Regulations with the necessary source of electrical energy to the satisfaction of a radio inspector.

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NLTP-1970	The radio communications equipment shall comply with requirement of SOLAS, Chapter IV, Radio communications.
NLTP-1971	Source of Energy shall be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.
NLTP-1972	A reserve source or sources of energy shall be provided on every ship, to supply radio installations, for the purpose of conducting distress and safety radio communications, in the event of failure of the ship's main and emergency sources of electrical power.
NLTP-433	Navigation equipment, communication equipment and collision avoidance signals shall be fitted to meet the requirements of the following regulations; Transport Canada Navigation Safety Regulations, Transport Canada Collision Regulations, and Standards for Navigating Appliances and Equipment, 1983, TP 3668E.
NLTP-434	All the navigational equipment installed on the vessels shall be type approved by Innovation, Science and Economic Development Canada with Type Approved Certificate and TCMS approved products.
NLTP-436	Due consideration shall be taken for the electrical and electronic equipment to be arranged and installed so that electromagnetic interference does not affect the proper function of navigational systems and equipment or present a hazard to personnel.
NLTP-14	1.3 050 - SHIP SYSTEM PERFORMANCE
NLTP-61	1.3.1 051 Ship System Performance Concepts
NLTP-191	1.3.1.1 051.1 Current and Future Fleet Demands
NLTP-437	The Current Canadian Fleet that the NLT will be required to support consists of the HALIFAX Class Frigates(5000 tonnes Displacement), VICTORIA Class Submarines (2,455 tonnes Displacement) and KINGSTON Class MCDVs (910 tonnes Displacement). The future fleet will consist of these existing three Classes of vessel with the addition of the Arctic Offshore Patrol Ships (AOPS), the Canadian Surface Combatant (CSC), the interim Auxiliary Oiler Replenishment (iAOR) and the Joint Support Ship (JSS). The largest of these will be the iAOR with the following notional particulars: - 183m length overall with 26,000 tonne displacement. - Estimated wind area above design waterline 3,500m ² , and - Estimated underwater area below design waterline 1,450m ² ."
NLTP-2156	1.3.1.1.1
NLTP-192	1.3.1.2 051.2 Method of Operation
NLTP-438	To enable cold moves with the fewest number of tugs the NLT's will work in concert with existing smaller tugs which will provide additional push/pull and orientation control along a second axis. The minimum number of large and smaller tugs that are required to move the existing ships, and are anticipated to be required for the future fleet are detailed in Table 1.

ID																																	
	<p style="text-align: center;">Table 1 Cold Move Minimum Tug Requirements</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Class</th> <th style="text-align: center;">Large Tugs</th> <th style="text-align: center;">Small Tugs</th> <th style="text-align: center;">Total Tugs Required</th> </tr> </thead> <tbody> <tr> <td>Halifax FFH</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Victoria SSK</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Kingston MCDV</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td>JSS</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> <td style="text-align: center;">2</td> </tr> <tr> <td>iAOR</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0</td> <td style="text-align: center;">2</td> </tr> <tr> <td>AOPS</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>CSC</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Class	Large Tugs	Small Tugs	Total Tugs Required	Halifax FFH	1	1	2	Victoria SSK	1	1	2	Kingston MCDV	1	0	1	JSS	2	0	2	iAOR	2	0	2	AOPS	1	1	2	CSC	1	1	2
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NLTP -439	<p>The vessel and its systems shall be designed to operate without degradation, or loss of watertight integrity of the hull envelope, or injury to embarked personnel, under the following environmental conditions:</p> <ul style="list-style-type: none"> - Air Temperature Max 35°C to Min -35°C - Relative Humidity Max 100% to Min 0% - Sea Temperature Max 32°C to Min -2°C - Sea Water Salinity Max 39 PPT to Min 0 PPT - Sea State 5 - Wind Speed 37.5 knots with 60 knot gusts 																																
NLTP -440	<p>Sea State is defined in the following table: The upper limits of wave height and wind speed shall be used unless otherwise specified.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Sea State</th> <th colspan="2">Significant Wave Height (m)</th> <th colspan="2">Sustained Wind Speed (knots)</th> <th rowspan="2">Model Period (sec)</th> </tr> <tr> <th>Range</th> <th>Mean</th> <th>Range</th> <th>Mean</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>0.5 to 1.25</td> <td>0.88</td> <td>11 to 16</td> <td>13.5</td> <td>7.5</td> </tr> <tr> <td>5</td> <td>2.5 to 4</td> <td>3.25</td> <td>22 to 27</td> <td>24.5</td> <td>9.7</td> </tr> <tr> <td>7</td> <td>3.4 to 4.9</td> <td>4.15</td> <td>28 to 35</td> <td>31.5</td> <td></td> </tr> </tbody> </table>	Sea State	Significant Wave Height (m)		Sustained Wind Speed (knots)		Model Period (sec)	Range	Mean	Range	Mean	3	0.5 to 1.25	0.88	11 to 16	13.5	7.5	5	2.5 to 4	3.25	22 to 27	24.5	9.7	7	3.4 to 4.9	4.15	28 to 35	31.5					
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NLTP -441	<p>The tugs shall be capable of operating throughout a 24 hour day, in both unrestricted and restricted visibility as defined by the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS).</p>																																
NLTP -193	<p><i>1.3.1.3 051.3 Threats</i></p>																																

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NLTP-442	The tugs shall not be assigned missions where an opposing hostile maritime force would operate.
NLTP-443	The tugs shall be built for early stage fire fighting and for support of rescue operations onboard or close to structures or ships on fire. These tugs shall be designed with passive and active protection systems, giving them the capability to withstand higher heat radiation loads from external fires.
NLTP-194	<i>1.3.1.4 051.4 Life Expectancy</i>
NLTP-444	The life of the tugs shall be designed for 25 years of operations beyond entering into service, and shall be efficient and economical to maintain over the lifespan of the tug.
NLTP-1973	The material used in the construction of the vessel shall meet the 25 year service life requirement.
NLTP-195	<i>1.3.1.5 051.5 Dimensions and Constraints</i>
NLTP-445	The tug's full load draught shall not exceed 6m.
NLTP-446	The tugs should be capable of operating under the hull flare of all current and future RCN vessel classes.
NLTP-447	Naval ships/vessels are comparatively thin-hulled in relation to commercial vessels of equivalent displacement and tonnage. The tugs shall have an adequate system of fenders to prevent structural damage and markings to thin hulled naval ships/vessels during berthing/un-berthing operations.
NLTP-196	<i>1.3.1.6 051.6 Towing and Maneuvering</i>
NLTP-448	In the tug configurations specified in Table 1, the NLT shall be able to cold move the ships of the current and future naval fleets, in the confines of the Halifax and Esquimalt harbours, in sustained winds of 25 kts from any direction and in currents of up to 2 knots in any direction.
NLTP-1974	The Bollard Pull of the NLT's shall be suitable to meet operational requirements to cold move the iAOR as defined in NLTP-437 and NLTP-438 with two tugs.
NLTP-450	Notwithstanding the power required to cold move the stated vessels, in the defined environmental conditions, the minimum Bollard Pull for the NLT must be at least 40 tonnes.
NLTP-451	The NLT shall have seamless, uninterrupted, and consistent thrust when changing the thrust vector through a full 360 degrees;
NLTP-452	The NLT shall have the ability to turn the tug on its own position ("on the spot") without creeping, or scribing an arc through the water in 25 knot winds and 2 knot current acting in any direction;
NLTP-453	The NLT shall have the ability to manoeuvre sideways ("sidestepping") along a line of bearing, on any axis, with the operator having simultaneous and immediate control over the tug's heading, headway and sternway;
NLTP-454	The NLT shall have an immediate response to control inputs changing the thrust direction and force.

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NLTP-455	The NLT shall have a simple, intuitive, and easy-to-operate control system which gives the operator a high degree of control over both the direction and the force of the thrust.														
NLTP-456	The helmsman shall be able to seamlessly and immediately change the propulsion direction to apply force in any vector around the tug.														
NLTP-457	The NLT shall have a simple and easy to train thrust control system which will be operated by one person.														
NLTP-458	The operation direction of handles that control the propellers must be identical with reaction direction of the vessel regardless in which direction the vessel is sailing.														
NLTP-459	The tug shall be able to transit (maintain course on desired heading at 100% MCR) with any heading in Sea State 5.														
NLTP-1975	The tug shall be capable of transiting to a suitable port of refuge on the route with the best heading to evade worse weather (Sea State 6 and above)														
NLTP-197	<i>1.3.1.7 051.7 Speed</i>														
NLTP-460	The NLT shall achieve a minimum free-running speed of 12 knots at 80% Maximum Unrestricted Continuous Rating (MCR), fully loaded in calm water;														
NLTP-461	The NLT shall achieve a free running speed of not less than 12 knots (at 90% of the maximum unrestricted continuous rating) in Sea State 2 at full load condition.														
NLTP-462	Tables 2 shows the anticipated power profile of the NLT. <table border="1" data-bbox="337 1024 792 1291"> <thead> <tr> <th colspan="2">Table 2 Power Profile</th> </tr> <tr> <th>Power</th> <th>Usage (%)</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td>10%</td> </tr> <tr> <td>70% (Working)</td> <td>27%</td> </tr> <tr> <td>80% (Working)</td> <td>60%</td> </tr> <tr> <td>100% (Full Power)</td> <td>3%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </tbody> </table>	Table 2 Power Profile		Power	Usage (%)	Idle	10%	70% (Working)	27%	80% (Working)	60%	100% (Full Power)	3%	Total	100%
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NLTP-198	<i>1.3.1.8 051.8 Range</i>														
NLTP-463	The NLT shall have a Range of not less than 2400 nautical miles (NM) at a transit speed of 10 knots for propulsion engines, generators, and the corresponding equipment for ship's operation in Sea State 2 at 0°C ambient air temperature with the fuel capacity determined from the difference between 95% Full Departure and 10% Full Arrival conditions.														
NLTP-464	The NLT shall be capable of Conducting out-of-harbour coastal towing of MCDVs, floating industrial plants and barges to a distance of up to 750 nautical miles from home port and return for a total range of 1500 nm (towing for up to 50% of the distance).-														
NLTP-449	The NLT shall be able to tow a 1000 tonne displacement, 56 metres LOA, vessel in Sea State 3 for a distance of 750 nm with no more tugs than shown in table 1.														

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NLTP -199	<i>1.3.1.9 051.9 Endurance</i>
NLTP -465	The NLT shall have a provisions and stores endurance to sustain operations for (10) days with a full complement.
NLTP -466	Required potable, grey and black tank capacity shall assume usage down to the Arrival Loading Condition (i.e. 10% tank capacity).
NLTP -467	The NLT shall be able to transfer a minimum of 20 tonnes of potable water, from its own storage tanks, to the DRDC research barge (YR494) and ships/vessels within close proximity of Esquimalt or Halifax harbours per visit.
NLTP -200	<i>1.3.1.10 051.10 Crewing</i>
NLTP -468	The tugs will be crewed by Transport Canada (TC) certified personnel. Vessels must meet the TC manning regulations for the vessel type and voyage class.
NLTP -469	The mandatory minimum crew and the essential TC qualification levels will be determined by the size of the tugs procured to meet the requirements of this SRD.
NLTP -470	Tug crews may include both male and female members.
NLTP -471	The vessel will normally be operated by a single officer (the master or a watch officer) on the bridge.
NLTP -472	The bridge shall be spacious enough to accommodate at least (3) watchstanders (pilot, lookout, engineer) to perform normal watchkeeping duties within the bridge interior.
NLTP -473	It is foreseen that a core crew of three (3) will be required for in-harbour operations, and a mission specific enhanced crew of 5 or 6 will be required for out-of-harbour operations when the crew is required to stand watches. Note: For out-of-harbour operations, when the crew is augmented to 5 or 6 (depending on whether a cook is embarked), the watch rotation will be 1 in 2. The cook works a 12 hour day.
NLTP -474	Full Complement; - Full Complement is defined as not less than (6) persons, mixed gender.
NLTP -201	<i>1.3.1.11 051.11 Compartmentation</i>
NLTP -475	As a minimum, the vessel shall accommodate the following compartments and lockers: <ul style="list-style-type: none"> - Bridge; - First-aid station furnished with a first-aid kit; - Pyrotechnics locker; - Flag lockers; - Deck Stores; - Wet Gear/ Drying Locker; - Garbage Store; - HAZMAT locker; - Locker for Spill Control and Disposal Kits; - Firefighting Equipment Storeroom;

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	<ul style="list-style-type: none"> - Firefighting Gear Lockers; - Galley (co-located to Mess); - Mess/Recreation Area to seat (6) crew in (1) sitting; - Cabins for (6) crew (as per Canadian Towboat Regulations) with no less than 2 single cabins and accomodation for mixed gender; - Washplaces (2); - Laundry area; - Fore peak; - Chain Locker; - Chain and Rope Storage; - Provisions Store; - Linen Locker; - Cleaning Gear Lockers; - Propeller Compartment; - Engine Room; - Generator Compartment; - Spares Parts Store; and - Workshop Area.
NLTP -202	<i>1.3.1.12 051.12 Weatherdeck Arrangement</i>
NLTP -476	The forward, after, and waist decks of the tug shall, as far as possible, be free of obstructions, to provide a clear, open working deck area, especially within the working radius of winches and lines.
NLTP -477	The tugs shall have spacious forward and after working decks to facilitate pushing, pulling, towing, line handling, and other typical tug work, from the bow or from the stern.
NLTP -478	The NLT shall have suitable arrangements to embark/disembark a pilot between the tug and a warship when the two vessel are underway at 5 knots or less and the tug is against the side of the warship. The hull and superstructure arrangement shall allow the pilot to step from one vessel to the another by means other than a pilot boarding ladder.
NLTP -479	The tug shall have at least one point of through-access on each of the port and starboard sides of the gunwales to enable the placement of a gangway to provide for safe access between the vessel and shore or between other vessels berthed alongside via the brow/gangway.
NLTP -480	The vessel shall have bridge wings, a gangway or a deck that provides access to the port and starboard side of the bridge exterior, accessible through bridge doors.
NLTP -203	<i>1.3.1.13 051.13 Accommodations</i>
NLTP -481	At least two single cabins and two double cabins are required. One single cabin shall be designated for the master and another for the chief engineer.
NLTP -482	The equipment arrangement, space outfitting and furnishing shall be designed to accommodate the 5th to 95th percentile of the population.
NLTP -62	<i>1.3.2 052 Ship Subsystem Performance Concepts</i>

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NLTP -204	<i>1.3.2.1 052.1 General</i>
NLTP -483	The vessel's systems shall be selected with simplicity of operation and maintenance as a prime consideration.
NLTP -484	Exposed equipment and machinery shall be provided with watertight housings as required.
NLTP -485	All machinery, structure, and outfit shall be designed to withstand the resultant forces from the ship/sea interactions and the anticipated environmental loads.
NLTP -486	All essential propulsion and auxiliary equipment, and the associated fluid systems (such as lubrication system, fuel oil systems and hydraulic systems) shall be designed to operate when the vessel is upright, and under the list, roll, trim and pitch conditions likely to be encountered in service in Sea State 5.
NLTP -205	<i>1.3.2.2 052.2 Hull Structure</i>
NLTP -487	The hull construction of the vessels shall be sufficient to withstand the environmental loads created from Sea State 5.
NLTP -488	The Contractor shall determine the hull plate thickness with any proposed hull corrosive protection system to meet the 25-years service life requirement.
NLTP -206	<i>1.3.2.3 052.3 Propulsion</i>
NLTP -489	The NLT shall have two (2) Medium Speed Diesel Engine Prime Movers.
NLTP -490	The NLT shall have twin propulsion units that are each capable of providing 360 degrees of vectored thrust.
NLTP -492	No erratic thrust vectors are to be developed during change of thrust direction.
NLTP -493	The propulsion system and power train shall be capable of continuous low-speed (< 1kt) manoeuvres while the vessel is underway.
NLTP -494	The propulsion system shall provide continued, undiminished operation during loss or reduction of electrical power generation (i.e. during a blackout).
NLTP -495	While underway, the vessel shall be controlled from the Bridge by the Master and machinery shall be monitored from the Bridge by the Engineer.
NLTP -496	The machinery plant shall be unmanned in the course of normal operations.
NLTP -497	A microprocessor based control system related to the safe propulsion and navigation of the vessel shall be provided.
NLTP -498	The control system shall be designed to require the minimum amount of operator training before the operator can competently take these vessels to sea.
NLTP -207	<i>1.3.2.4 052.4 Electric Plant</i>
NLTP -343	<i>1.3.2.4.1 052.4.1 Ship Service Generators</i>

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NLTP -499	The vessel shall be designed with electrical power supplied by two identical, independent, diesel driven, three phase, 60 Hz, 600V AC ship's service generating sets.
NLTP -500	The rating of each generator set shall be such that one set can continuously supply the peak cruising load at sea with allowance for 20% future growth.
NLTP -501	Generators shall be capable of supplying a load 15% greater than their rating for one hour in every 12-hour period.
NLTP -502	The generators shall be compliant with current US Environmental Protection Agency environmental standards for Marine diesel engines. As a minimum the engines shall be Tier III compliant.
NLTP -503	The standby generator set shall be capable of automatically assuming the ship's service electrical load within 45 seconds after failure of the running generator in accordance with TP 127e.
NLTP -344	1.3.2.4.2 052.4.2 Electrical Systems
NLTP -504	The NLT shall be provided with the following: - Primary Power (600 volts AC, 3 phase, 60 Hz) shall be distributed through the main switchboard, distribution switchboards and distribution panels throughout the vessel. This shall be delta connected ungrounded. - Secondary Power that is converted, by transformers, motor generators, static frequency converters, etc. from primary power and distributed throughout the vessel to lighting, receptacles, small appliances, etc. at 120 volts AC, three and single phase, 60 Hz. This shall be delta connected and ungrounded. - Tertiary Power that is converted by transformers to 240 volts AC, 60Hz, as required. - 24V DC Emergency Power as required for the safety of the crew and the survivability of the vessel. This shall be ungrounded, bonded to the hull at a single point. - 12V DC Power as required. This shall be ungrounded, bonded to the hull at a single point.
NLTP -505	In accordance with TP 127e, all electrical apparatus shall be constructed so as to function satisfactorily during voltage fluctuations within 10% below and 6% above the nominal voltage of the system. Alternating current apparatus shall be constructed so as to function satisfactorily at frequencies within 5% of the nominal frequency of the system.
NLTP -345	1.3.2.4.3 052.4.3 Electronic Systems
NLTP -506	Electromagnetic compatibility (EMC) is the ability of electrical and electronic systems, equipment, and devices to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. Electromagnetic Interference (EMI) is Electromagnetic energy that interferes with the proper functioning of any device.

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NLTP-507	The Contractor shall select, locate and install all electrical and electronic equipment to ensure compatibility (EMC) between the equipment concerned and other radio communication and navigational equipment carried onboard to prevent EMI.
NLTP-208	1.3.2.5 052.5 Auxiliary Systems
NLTP-346	1.3.2.5.1 052.5.1 Harbour Firefighting
NLTP-508	The tugs shall be fitted with a firefighting outfit of fire pumps, fire monitors, foam and water tanks, and other required equipment which conforms to the FIFI 1 or equivalent notation.
NLTP-509	In addition to the equipment and design requirements of the FiFi I classification, these tug boats shall also be capable of discharging foam from their two fire monitors at the rates and capacities defined by the Regulatory Body for FiFi III class. The sole difference with respect to this Foam Monitor System shall be that only two monitors will be fitted in total and these two monitors will be capable of discharging either sea water or foam.
NLTP-347	1.3.2.5.2 052.5.2 Damage Control and Firefighting
NLTP-510	The internal damage control system and firefighting equipment shall: - be approved to meet TC, SOLAS and Classification Society requirements; and - be capable of extinguishing a fire within the main machinery spaces in an environmentally safe manner without the use of manned fire-fighting parties.
NLTP-511	The tugs shall be equipped with automatic fire and flood detection and activation systems that can be monitored/activated from the vessel's Bridge and at a remote location, such as the Fire hall, not on board the vessel. The on-board alarm panels shall indicate the location and nature of the alarm.
NLTP-512	An intrusion alarm shall be provided.
NLTP-348	1.3.2.5.3 052.5.3 Anchor Handling, Towing and Line Handling
NLTP-513	The vessel shall be equipped with anchoring equipment.
NLTP-514	Anchor pockets shall be provided and constructed so that no parts of the anchors protrude beyond the fair hull lines when the anchors are fully housed.
NLTP-515	Deck equipment shall be fitted and configured on both the aft deck and foredeck to facilitate towing and ship berthing assist functions of the tug.
NLTP-516	The tugs shall be configured with a suitable arrangement of deck fittings, including sufficient cleats, chocks and fairleads, to facilitate securing of mooring lines to the tug for berthing.
NLTP-517	The vessel shall be configured with at least head, stern, and two spring lines to facilitate berthing.
NLTP-349	1.3.2.5.4 052.5.4 Lifesaving

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NLTP-518	The NLT shall be fitted with a SOLAS approved Rescue Craft and a launching/recovering system.
NLTP-519	The tug shall be supplied with the following lifesaving and safety equipment: - life rafts; - life buoys; - life jackets; - immersion suits; - fire extinguishers; - pyrotechnics; - Emergency Position Indicating Radio Beacons (EPIRBs); - Search and Rescue Transponders (SARTs); - and all other lifesaving equipment necessary to meet DND, TC, SOLAS, and Classification Society requirements.
NLTP-520	Equipment shall be selected from the TC Mandatory Service Bulletin (MSB) Approved Products Catalogue Index (APCI) product approval list.
NLTP-350	1.3.2.5.5 052.5.5 Pollution Response Equipment
NLTP-521	The tugs shall be able to embark and deploy Tier 1 pollution response equipment, a skimmer, and a standard-size PVC barrel of oil spill response materials. Note: See Transport Canada, Response Organizations Standards (1995) – TP 12401 E
NLTP-522	The NLT shall be configured for deploying containment booms, skimmers, and other clean-up equipment in response to a Fuel Spill.
NLTP-523	The NLT shall be fitted with a covered stowage rack for gasoline containers for the Rescue Craft.
NLTP-351	1.3.2.5.6 052.5.6 Storing and De-Storing
NLTP-524	The NLT shall be capable of being refuelled and provisions embarked (including water, fuel and stores), or discharged (including potable water, grey and black water and dirty lube oil) from either side.
NLTP-352	1.3.2.5.7 052.5.7 HVAC
NLTP-525	The HVAC system shall be designed under the external ambient conditions defined in NLTP-439. The HVAC system shall be capable of maintaining the following internal environment for all manned spaces: - A maximum temperature of 24°C with a maximum of 45% relative humidity in summer, - A minimum of 18°C with a relative humidity no lower than 30% in winter, and - A minimum of outdoor fresh air 0.008 m3 per second (8 litres/sec) per person.
NLTP-526	The HVAC system shall maintain the temperature of all manned spaces within $\pm 2^{\circ}\text{C}$ during normal operation.
NLTP-527	Separate temperature and humidity control shall be provided for the bridge. A complete or partial separate HVAC system may need to be provided to meet this requirement.

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NLTP -528	The HVAC system and all related components shall be designed to have at least 10% reserve capacity above that required to ensure the maximum and minimum compartment temperatures described above are maintained.
NLTP -209	<i>1.3.2.6 052.7 Outfit and Furnishing</i>
NLTP -353	<i>1.3.2.6.1 052.7.1 Windows</i>
NLTP -529	The Bridge shall have large windows and sky ports to provide maximum all-round visibility.
NLTP -15	1.4 060 - SUBSYSTEM CHARACTERISTICS
NLTP -63	1.4.1 061 Hull Structure
NLTP -530	The vessel shall be constructed of steel and shall be built in accordance with approved drawings, using approved materials and products tested, inspected and certified by a Regulatory Body.
NLTP -531	During detailed design, areas which result in high stress concentrations, sudden change in the structural member continuity, etc., shall be avoided.
NLTP -532	All weather deck and internal spaces, where water is likely to accumulate shall be self-drained to avoid development of the corrosion.
NLTP -533	All metal construction shall be of welded design.
NLTP -534	Where frames, floors, beams, girders, etc. cross-welded seams or butts in plating or webs, these shall be neatly scalloped to clear such seams.
NLTP -535	All cutouts in structure should be circular or have radius corners.
NLTP -1976	All cutouts shall be compensated by insert plates where required.
NLTP -536	Longitudinal strength should be maintained by insuring continuity of structural members from aft to forward.
NLTP -537	Where cuts or interruptions impair the strength of main structural member continuity, effective compensation shall be fitted.
NLTP -538	Manholes, lightening holes and other openings must be suitably framed and stiffened where necessary.
NLTP -539	Limber holes shall be provided in all structural members where necessary to permit total drainage to lowest point of compartment or tank.
NLTP -64	1.4.2 062 Propulsion Plant
NLTP -210	<i>1.4.2.1 062.1 Power Train</i>
NLTP -540	The power train is defined as the prime movers (diesel engines), generators and electric motors (if hybrid or electric propulsion is selected), shafts, bearings, shaft seals, input gearboxes, and propellers as applicable to the drive system installation.

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NLTP-541	Power train, essential auxiliaries and control equipment must be selected from among models currently in production, and are available in North America with proven logistical support chains (sales offices, warehousing spares, and field service representatives) already established and currently operating in Canada.
NLTP-542	The main propulsion machinery and essential auxiliaries shall be selected with all the components presently in service in marine environment as an integrated unit with a minimum of 3000 hours operation.
NLTP-543	Means shall also be provided to sustain or restore normal operation of propulsion even with a failure of any one essential auxiliary.
NLTP-545	The Contractor shall be responsible for the complete integrated solution for the entire propulsion and power generation package.
NLTP-548	Machinery guards shall be installed to protect persons on board from accidental contact with moving parts, hot surfaces and other hazards so as to reduce to a minimum any danger to persons on board.
NLTP-211	<i>1.4.2.2 062.2 Diesel Engines</i>
NLTP-550	All diesel engines for the main propulsion, as generator prime movers or for the FiFi I prime mover, if fitted, shall be selected from approved marine engine models listed by both the Classification Society and Transport Canada Marine Safety.
NLTP-551	The selected pumps, generator and main propulsion diesel engines and their respective control systems shall be of the same model for the entire class of tugs.
NLTP-552	The propulsion engines, diesel generators and any FIFI diesel pumps shall be fuelled by commercially available diesel fuel to CGSB 3-GP-11c Naval Distillate Fuel.
NLTP-553	The diesel engines shall be capable of operation on lubrication to Military Specification MIL-L-9000 Lubricating Oil, Shipboard Internal Combustion Engine, High Output Diesel and a single or multi-grade commercially available (API/SAE graded) equivalent lubricating oil.
NLTP-554	All diesel engines and control systems chosen shall be appropriate for continuous and satisfactory operation in a marine environment.
NLTP-212	<i>1.4.2.3 062.3 Resilient Mounts</i>
NLTP-555	The main propulsion engines and close-coupled gearboxes, and generator sets may be resiliently mounted on foundations in order to meet the requirements of noise and vibration levels at all engine operating speeds and power output.
NLTP-556	The design and installation of any resilient mounting systems shall allow for the simple examination of mounts and for the replacement of any single mount without disconnection of any propulsion equipment interface or equipment beyond the limits of adjacent mountings.
NLTP-557	The life of all resilient mountings shall be at least 10 years.
NLTP-558	Unless its protective coating is applied by the mount manufacturer, all resilient elements shall not be painted or require painting for environmental protection.
NLTP-560	Where equipment is resiliently mounted, all pipe and duct connections shall be made through flexible sections.

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NLTP -213	<i>1.4.2.4 062.4 Propulsion Control</i>
NLTP -561	The propulsion system shall be controllable and monitored through a microprocessor-based Integrated Platform Management System (IPMS).
NLTP -562	The control system and alarm system shall be a distributed networked system. Each part of the machinery control system shall feedback all required data to the consoles.
NLTP -563	The consoles shall display all control and alarm information in a manner consistent with ASTM F1166.
NLTP -564	The control system shall be electronic with interfaces arranged in a manner consistent with ASTM F1166.
NLTP -565	Primary control (including start and stop) and monitoring of propulsion, machinery, power generation and auxiliary systems shall be through the MCC located on the bridge.
NLTP -566	Emergency stops for the machinery plant shall be located in the following places: - on the BCC; - on the MCC; - on the engine control panels in the engine room; and - outside the engine room door(s), at a prominent, rapidly accessible location.
NLTP -567	Insofar as possible, all local engine controls, gauges and alarms shall be centrally co-located in the engine room near the engines.
NLTP -568	Machinery, fire, emergency, and bilge audible and visual repeater alarms are required in the engine room. Audible and visual repeater alarms shall comply with and be located in accordance with TCMS and Class requirements as applicable.
NLTP -65	<i>1.4.3 063 Electric Plant</i>
NLTP -214	<i>1.4.3.1 063.1 Motors and Controllers</i>
NLTP -569	All motors installed below deck shall be totally enclosed fan cooled while those installed on deck exposed to weather shall be watertight.
NLTP -570	All motors exposed to the weather or where humidity exceeds 95% relative humidity shall be fitted with anti-condensation heaters that shall be automatically actuated when the motor is de-energized.
NLTP -571	All motors shall be designed for 600 V 60Hz, 3 phase, rated for continuous duty with Class F insulation and equipped with anti-friction, factory sealed pre-lubricated ball bearings. All motors to be fitted with thermal overload, short circuit protection and a grounding strap.
NLTP -572	Motors of 0.5 HP or less may be designed for operation on 115 volt, single phase.
NLTP -573	All motors connected to power feeds from static power converters shall be rated for inverter use.
NLTP -574	Motor starters and controllers shall be mounted within line of sight of the auxiliary they serve.
NLTP -575	In addition to the remote push button start/stop controls, remote motor running status indicators shall be provided.

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NLTP -1977	Indicating lights mounted in the motor controller door shall notify the operator of equipment status
NLTP -576	Local controllers shall be provided to select any running or stopped condition possible for the driven unit and shall be mounted in drip-proof enclosures.
NLTP -577	An overload-reset button shall be provided on the enclosure door of each motor controller unless the operation of the auxiliary necessitates remote reset.
NLTP -578	A complete wiring diagram of each controller shall be permanently attached, with a flame retardant, transparent, oil resistant protective covering, to the inside surface of the control cabinet door.
NLTP -579	Auxiliaries with remote control positions shall be provided with a “Remote-Local” control switch in motor starter/controller enclosure.
NLTP -215	<i>1.4.3.2 063.2 System Protection and Protective Devices</i>
NLTP -580	Loads on distribution panels shall be arranged to obtain as balanced a load as possible.
NLTP -581	The aggregate load connected to each of the three phases of a distribution panel shall be within 15% of each other.
NLTP -582	Each unit of equipment and all circuits shall be protected from short circuit current and thermal overloads. For AC systems, the maximum available short-circuit current shall be determined IAW requirement of TP127E and IEC 60909, short circuit calculation.
NLTP -583	Circuit breakers shall be the protective devices for power distribution circuits.
NLTP -584	Circuit Breakers shall be proper voltage/current rating, manual reset type, instantaneous short-circuit protection and be of the plug-in draw out type.
NLTP -585	Distribution circuit breakers shall be bolted on, moulded case type with adjustable trip settings.
NLTP -586	Circuit breaker type distribution panels shall be provided for efficient distribution and protection of circuits.
NLTP -587	Distribution panel enclosures shall provide a degree of protection to the panel appropriate for the installation location.
NLTP -588	Distribution panels shall be of a sheet steel cabinet construction with a full description and feeder designation number of each circuit on the inside of the door.
NLTP -589	Distribution panels shall be provided with slots for spare circuit breakers of at least 10 percent of the total circuits with a minimum of two.
NLTP -590	Apparatus containing transistors, diodes and other solid-state devices that are susceptible to damage shall include protection against voltage transients or surges caused by load switching or fault or failures in the power systems.
NLTP -216	<i>1.4.3.3 063.3 Electric Cables</i>
NLTP -591	All cable shall be low smoke, zero halogen and unarmored.

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NLTP-592	All cables shall terminate in approved marine grade terminal blocks.
NLTP-593	All cables shall be commercial marine quality and an approved TCMS product or approved by a regulatory body and IEEE.
NLTP-594	All cables shall be designated by an identification number that shall be stamped onto non-ferrous metal tags or cable labels, securely affixed to each end of the cable run in each main compartment or subdivision and where passing through decks or bulkheads.
NLTP-595	Cableways and cables shall be installed clear of machinery access routes and maintenance envelopes.
NLTP-1978	Electric cables exposed to risk of mechanical damage shall be protected by suitable protective casings.
NLTP-596	Arrangement shall be provided for all cable penetrations of deck and bulkhead to ensure these penetrations shall not compromise structural and tightness integrity of the deck/bulkhead.
NLTP-597	Where electric cables pass through watertight, fire insulated or gastight bulkheads or decks separating hazardous zones or spaces from non-hazardous zones or spaces, the arrangements are to be such as to ensure the integrity of the bulkhead or deck is not impaired.
NLTP-598	Where cables pass through non-watertight bulkheads or structural steel, the holes are to be bushed with suitable material. Electric cables passing through decks are to be protected by deck tubes or ducts.
NLTP-599	A minimum of 10% spare space by cross-sectional area shall be left in all cableways and penetrations. This spare space shall be easily utilized.
NLTP-600	High-voltage, low voltage, control and data cables are to be segregated to reduce the risk of mechanical damage and electromagnetic interface.
NLTP-601	AC cables and DC cables shall be run on separate cable trays or suitably shielded from interference.
NLTP-602	To minimize electromagnetic interference, a minimum spacing of 450 mm shall be provided between cables of each group or if the minimum spacing is not practicable, additional approved shielding shall be provided.
NLTP-1979	Shielding and spacing requirement shall not apply to cabling where entering associated equipment or where cables cross at an angle of 90°.
NLTP-603	Cables for deck machinery shall be run internal to the ship's hull and superstructure wherever possible.
NLTP-604	Cables for exterior lighting, receptacles, etc shall be run inside deckhouses.
NLTP-605	Floodlights and searchlights shall be hard wired through watertight junction boxes.
NLTP-606	A set of spare cables including two pair #16 and one 3C #14 cable shall be installed and routed from the engine room and the wheelhouse.
NLTP-1980	Extra length of a minimum of (x)m must be neatly stowed and the conductor ends shall be protected by a waterproof covering.

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NLTP -217	<i>1.4.3.4 063.4 Circuit Designations</i>
NLTP -607	All circuits shall be identified using the circuit designations in IEEE 45. Where designations for systems are not available in IEEE 45, the Contractor shall submit proposals to the Technical Authority for approval.
NLTP -218	<i>1.4.3.5 063.5 Emergency 24V DC Distribution and 12V DC Distribution</i>
NLTP -608	This system shall be provided in accordance with TP 127E and IMO Res A.534 (13) Code on Safety for Special Purpose Ships.
NLTP -609	The emergency electrical supply shall come into operation automatically in the event of main electrical power supply failure.
NLTP -219	<i>1.4.3.6 063.6 Lighting System</i>
NLTP -354	<i>1.4.3.6.1 063.6.1 Lighting Fixtures</i>
NLTP -610	The ship shall be provided with an illumination system designed to provide lighting levels as specified by the Illumination Engineering Society Lighting Handbook or as specified elsewhere in this specification.
NLTP -611	Lighting Fixtures and lamp types are to be in accordance with IEC 60092-306.
NLTP -612	Fixtures shall be constructed of corrosion resistant materials.
NLTP -613	Fixtures shall be suitable for direct mounting to bulkheads or decks, without the need for vibration isolation mounts.
NLTP -614	Fixtures shall operate satisfactorily from 115 volts, single phase, 60 hertz, and shall use solid state ballasts capable of maintaining the fixture light output over a voltage range of $\pm 15\%$ and a frequency range of $\pm 10\%$.
NLTP -1981	Lighting circuits shall be supplied by final sub-circuits separate from heating and power.
NLTP -615	A minimum number of different fixture types shall be used.
NLTP -1982	Care shall be exercised to minimize the quantity and number of spare parts and lamps to be carried on board.
NLTP -616	Fixtures shall be mounted in such a way that obstruction of the light produced by any equipment, structure, or systems is minimized.
NLTP -617	All lighting shall be CSA approved types, to fit common, commercially available sockets.
NLTP -618	All light fixtures shall be located in readily accessible areas to facilitate replacement.
NLTP -619	Unique fixtures required for the performance of specific tasks shall be provided as necessary.
NLTP -620	Fixtures controlled by door and / or hatch switches shall be designed so that the frequent on / off operation shall not adversely affect lamp life.

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NLTP -621	Fixtures installed on the weather deck shall be watertight, and shall include shades to control light spillage.
NLTP -2180	All light fixtures shall be hard wired.
NLTP -2183	All light fixtures shall be LED type unless otherwise specified.
NLTP -622	Fixtures shall be capable of being replaced without the use of special tools.
NLTP -623	Red lighting shall be integrated with the normal lighting in the stairwell and passageway to Bridge.
NLTP -624	Indicating lights, where required, shall to the maximum extent possible, be long life LED or other solid-state type.
NLTP -355	1.4.3.6.2 063.6.2 Light Switches
NLTP -625	Lighting shall be controlled locally by switches installed at the entrance to each space.
NLTP -626	All switches shall be located the same height above the deck and installed in accordance with ASTM F1166 Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities.
NLTP -2141	Switches must be mounted 48 inches above the deck such that personnel can reach switches with ease and in safe positions for them.
NLTP -627	In galleys, laundries, washplace and similar locations, in areas, which are moisture laden, switches shall be of watertight.
NLTP -628	Where spaces have two or more entrances, switches shall be located at each entrance.
NLTP -629	Passageway lighting shall be switched from the distribution panel.
NLTP -630	Specific task lights shall have integral switches.
NLTP -631	In addition, in areas where a variable lighting level is desired, each individual fixture shall be provided with an integral and dimmable switch.
NLTP -632	Where required, switches to control lighting at hatches and doors shall be of the sealed, magnetic type.
NLTP -633	Switches shall be installed internal to the structure, and shall not restrict the clear opening.
NLTP -356	1.4.3.6.3 063.6.3 Emergency Lighting
NLTP -634	Emergency lighting shall be provided using rechargeable batteries in the lighting fixtures.
NLTP -635	Emergency lighting fixtures shall, upon power failure, automatically switch to battery power, energizing one of the lamps in the fixture.
NLTP -636	The level of illumination provided by the emergency lighting is to be adequate to permit safe evacuation in an emergency. All areas along the escape route or other low

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	lighting location (LLL) shall have a minimum illumination of 50 lux in accordance with Maritime Occupational Health and Safety Regulations.
NLTP -2182	Escape routes shall be clearly marked in accordance with SOLAS 1974, Regulation 13 - Means of escape.
NLTP -637	The battery in emergency lighting shall be capable of maintaining the light for a minimum of 2 hours when fully charged, and re-charging shall require no more than 4 hours.
NLTP -1983	Recharging shall occur automatically upon restoration of main electrical power.
NLTP -638	Where emergency lighting cannot be provided integral with the normal lighting, separate non-rechargeable, battery-powered fixtures shall be installed.
NLTP -639	These fixtures shall be energized upon power failure, and shall provide a minimum of 2 hours of lighting with fresh batteries.
NLTP -357	1.4.3.6.4 063.6.4 Illumination Levels
NLTP -640	The general level of illumination (lux) for compartments and areas throughout the ship shall be in accordance with the requirements as outlined in the CSA Towboat Crew Accommodation Regulations unless otherwise stated in this SRD.
NLTP -641	The general level of illumination in other compartments and areas throughout the ship shall be as follows; <ul style="list-style-type: none"> - 755 lux Galley; - 540 lux desks in cabins; - 110 lux for storerooms, lockers, and fan compartments; - 210 lux passageways and lobbies; - 540 lux workshop area and 1075 lux workshop bench; - 540 lux for Bridge; - 540 lux for machinery space(s), emergency switchboard compartment, and propeller compartment.
NLTP -642	Illumination for the Bridge Control Console and Machinery Control Console shall be greater than the minimum level necessary to maintain a visual gradient with the alarm, signal and indicating lights, to readily recognize the information cues from the normal operating positions.
NLTP -643	Glare reducing features such as anti-glare coating, individual light switch and removable hood shall be provided to monitor displays, if deemed necessary, to resolve glare problem identified during trials.
NLTP -66	1.4.4 064 Command and Surveillance
NLTP -644	The vessels shall be fitted with navigation equipment, communication equipment, collision avoidance signals, and miscellaneous aids sufficient in all respects for the safe handling of the vessels as defined in all operations.
NLTP -67	1.4.5 065 Auxiliary Systems
NLTP -220	1.4.5.1 065.1 General

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NLTP -645	The auxiliary systems are defined as all installed systems required to support the operation of the vessel excluding the propulsion and electrical system. These include fuel oil, firemain, fire fighting, bilge and ballast, lubricating oil, diesel engine combustion air intake and exhaust, compressed air, steering system, HVAC, machinery space ventilation, fresh water, black grey water and sanitary flushing system, fire detection and extinguishing system, hydraulic, navigation and communication, and electrical power.
NLTP -646	Components and equipment of Auxiliary Systems must be from among models currently available in North America with proven logistical support chains (sales offices, warehousing spares, and field service representatives) already established and currently operating in Canada.
NLTP -647	Essential auxiliary systems are defined as those systems required to maintain propulsion capability and damage control. These systems include fuel oil, firemain, bilge and ballast, lubricating oil, diesel engine combustion air intake and exhaust, steering system, machinery space ventilation, fire detection and extinguishing system, navigation and communication, and electrical power.
NLTP -648	Essential auxiliaries shall be configured in duplicate with automatic transfer capability.
NLTP -649	Means shall be provided whereby normal operation of machinery plant can be sustained or restored even though one of the essential auxiliaries becomes inoperative.
NLTP -650	Gauges selected for auxiliaries shall be of proven design in similar applications and suitable for remote monitoring and control.
NLTP -221	1.4.5.2 065.2 Piping Systems
NLTP -1994	Piping system material shall be in accordance with ASTM F1155.
NLTP -2167	No plastic pipe shall be used.
NLTP -819	Seamless piping shall be used for all systems.
NLTP -651	The maximum allowable fluid flow rates and/or fluid velocities shall be in accordance with applicable limitations specified in ASTM F1155.
NLTP -652	The associated pipe diameter shall be based on pressure drop calculations as determined by the pressure and flow requirements of equipment.
NLTP -653	The use of regulators and/or restrictive devices, such as orifices, in lines servicing auxiliary components, such as heat exchangers, is acceptable providing such appurtenances do not impose undue restrictions, large pressure drops or destructive erosion conditions.
NLTP -654	No piping shall pass through fresh water tanks, black water tanks, diesel fuel oil tanks and predominantly electrically equipped (100 kWh or greater) spaces, unless directly associated with and/or servicing such spaces.
NLTP -655	Piping systems shall be installed to afford easy access to valves, manifolds, strainers, filters and other items incorporated in the systems requiring periodic servicing.

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NLTP -656	Filters shall be fitted in parallel (i.e., duplex) for the purpose of enabling cleaning without disturbing the normal functioning of the systems.
NLTP -657	Filters/filter chambers shall be provided with suitable means for venting or depressurizing before being opened.
NLTP -659	Piping shall be fabricated and installed so as to provide good alignment and to avoid undue stress on equipment to which it is connected.
NLTP -660	Pipe bends should have a radius not less than four times the pipe nominal diameter.
NLTP -661	All piping shall be led as directly as practical with a minimum of bends commensurate with required piping system flexibility, and with a minimum number of joints.
NLTP -662	Pipe runs that are directly between two watertight bulkheads shall have a minimum of one bend to allow for ship flexure.
NLTP -663	Necessary joints shall be either welded or brazed sleeved joints.
NLTP -664	Bolted joints shall be used only where absolutely necessary for ready removal for maintenance.
NLTP -665	All mechanical joints shall be shielded as required in way of electrical equipment and where flammable fluids within the pipes may impinge on hot surfaces.
NLTP -666	Threaded pipe joints are not permitted in any size, with the exception of connections to machinery or gauges supplied with threaded couplings.
NLTP -667	Pipe runs shall be designed to ensure no interference with normal access routes and equipment maintenance envelopes.
NLTP -668	All piping carrying fresh water (including chilled water) and seawater shall be provided with drain plugs as necessary to afford proper drainage by gravity for maintenance.
NLTP -669	Care shall be taken to avoid air pockets in pipelines that may prevent proper operation of the system or component. Where air pockets or where air entrapment due to turbulence or component construction may result in the system becoming air locked, mechanism such as petcocks shall be installed as necessary to bleed the systems or components.
NLTP -671	Valves shall be suitable for the intended application and shall be readily accessible for inspection, operation, maintenance and removal.
NLTP -672	Where possible all valves should be grouped in manifold form.
NLTP -673	Valves that are frequently used and not readily accessible shall be fitted with extension spindles.
NLTP -674	Valves fitted under floor plates shall be positioned for ease of operation.
NLTP -675	All hand-wheels shall be marked to show the direction of closure.
NLTP -676	Exhaust pipes and other hot surfaces within reach of personnel shall be properly insulated or otherwise protected to prevent accidents or burns.

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NLTP -677	Hot surfaces with temperature in excess of 60°C shall be cooled or insulated so as not to have a surface temperature that will exceed 60°C.
NLTP -678	Hot surfaces that could cause ignition shall be protected from contact with combustible material.
NLTP -679	The exhaust pipes shall be of sufficient height or arranged to ensure that no exhaust gases can pass back into the vessel.
NLTP -680	The vessel shall be fitted with an active pipework anti-fouling system consisting of a control panel, anodes, and all necessary wiring, suitably configured for the hull and pipe material selected.
NLTP -818	Piping system material shall be in accordance with ASTM F1155.
NLTP -1320	A tally plate shall be fitted adjacent to each valve to identify operation and to caution users.
NLTP -222	<i>1.4.5.3 065.3 Pumps</i>
NLTP -681	All pumps shall be of a commercial marine standard, suitable for intended service and compatible with the specified piping system materials.
NLTP -682	Where two or more pumps of the same size and type are required for a particular service, they shall be identical.
NLTP -683	Pumps shall be fitted with mechanical seals.
NLTP -684	Shafts of horizontal pumps must be oriented fore and aft.
NLTP -685	Internal parts of seawater pumps shall be of non-corrosive materials.
NLTP -686	Pumps handling black and grey water, fuel, and lubricating oils shall have drip pans installed to contain any possible leakage from the pump seals.
NLTP -1984	Drip pans in most cases will require drains and piping to the bilge or a suitable collection tank.
NLTP -687	All seawater pumps shall be fitted with sensors and alarms to indicate bearing temperature, dry-running condition, and vibration levels.
NLTP -223	<i>1.4.5.4 065.4 Instrumentation</i>
NLTP -688	Instruments (gauges, thermometers, indicator, etc.) for machinery, pumps, piping and mechanical systems shall be installed in accordance with OEM recommendations, TCMS and/or Class requirements as applicable to ensure the safe operation of equipment and systems.
NLTP -689	Instruments shall be waterproof to prevent damage from moisture and other corrosive elements.
NLTP -690	Instruments, gauges and their components shall not be adversely affected by vibration, temperature, impact or dust and shall be tailored to their particular applications.
NLTP -691	Instruments shall have isolation capacity to enable replacement while system is under pressure.

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NLTP -224	<i>1.4.5.5 065.5 Vents and Sounding</i>
NLTP -693	All tanks shall be provided with venting, overflow, sounding arrangements, and level indication.
NLTP -694	All cofferdams and void spaces shall be provided with venting arrangements.
NLTP -695	All deck fill, sounding tubes and vent openings shall be clearly marked.
NLTP -696	At least two vents shall be fitted per tank.
NLTP -697	Vent pipes shall be flush with the inside top of the tank.
NLTP -698	Sounding pipes shall be installed as near vertical as possible, and shall be anchored at their lower end and adequately supported over their length.
NLTP -699	Sounding pipes terminating above the weather deck shall be in protected locations.
NLTP -700	The height from the deck to the point where water may enter a vent pipe to the tank below must be at least 760mm on the freeboard deck and 450mm on the superstructure deck.
NLTP -701	All vent and sounding pipes shall be clearly identified as to tank number and contents.
NLTP -702	Vent outlets shall be located to afford maximum protection from mechanical damage and ingress of seawater.
NLTP -703	Outlets shall not be closer than one (1) metre to any ventilation inlet, porthole or door.
NLTP -704	Corrosion resistant flame screens shall be fitted to fuel oil tank vent outlets.
NLTP -705	Vent terminals for void spaces and ballast tanks shall be fitted with ball check closures.
NLTP -1985	Vent terminals for fresh water tanks must be fitted with an insect screen.
NLTP -225	<i>1.4.5.6 065.6 Thermal Insulation for Piping and Machinery</i>
NLTP -707	The hot fresh water system and water heater shall be insulated.
NLTP -1986	Cold fresh water, chilled water and firemain piping in engine room(s) and accommodation spaces shall be insulated to prevent sweating.
NLTP -708	Insulation around valves shall be arranged to permit easy removal and replacement of valves without disturbing the remaining pipe insulation.
NLTP -709	The Contractor shall install insulation and lagging to hot metal surfaces in areas susceptible to personnel contacts.
NLTP -710	Sheathing shall be provided on insulation in areas where the risk of damage to the insulation is high (for example, a high traffic area and insulation adjacent to plumbing fixtures).

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NLTP -226	<i>1.4.5.7 065.7 Markings and Piping Designations</i>
NLTP -711	The identification of fluids in each piping system, and the direction of flow, shall be indicated on the pipes and is to be made by means of titles in both official languages, in accordance with ASME A13.1
NLTP -712	Piping titles shall be prominently displayed adjacent to the direction of flow indicator.
NLTP -713	Where the view is unobstructed, the titles shall be lettered in the two lower quarters of the pipe or covering. Lettering in this position is unlikely to be obscured by dirt collection or mechanical damage.
NLTP -714	Titles shall be clearly visible from operating positions, especially those adjacent to control valves.
NLTP -715	Titles shall be applied by use of upper case letters and Arabic numerals.
NLTP -716	Manufactured colour code tapes and title markers shall be a pressure sensitive material with protective overcoating and having conformability and dead stretch properties.
NLTP -717	Tapes and markers shall be suitable for temperature ranges from -40°C to +150°C; be resistant to abrasion and wear; be waterproof, fungus, and weather resistant; and be in accordance with the detailed requirements of this standard.
NLTP -718	Valve label plates shall be in accordance with ASTM F992 Valve Label Plates and shall be securely attached to all valves.
NLTP -68	<i>1.4.6 066 Outfitting</i>
NLTP -227	<i>1.4.6.1 066.1 General</i>
NLTP -719	All controls for operating the machinery, equipment, instruments, pumping systems, valves, cocks, air pipes, inlets, sounding pipes, switches, etc shall be permanently marked with engraved plates mechanically fastened clearly showing their purpose.
NLTP -228	<i>1.4.6.2 066.2 Colour</i>
NLTP -720	The interior colour scheme for all furnishing and finishing materials shall be developed from CFTO D-23-003-005/SF-002 Specification for Maintenance Painting of HMC Ships. Paint colours called up in the scheme shall be in accordance with FED-STD-595C (formerly CGSB 1-GP-12c), Standard Paint Colours, Part 1 Colour Identification and Selection.
NLTP -229	<i>1.4.6.3 066.3 Joiner Bulkheads and Linings</i>
NLTP -721	Joiner bulkheads, shipside linings and false ceilings shall be fitted in all cabins, mess/dining room, interior passageways, and Bridge.
NLTP -722	Linings shall not however be installed on the ship side in any space where the standing deck is at or below the Deep Displacement waterline.

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NLTP -723	Stainless steel faced bulkhead and shipside linings and ceilings shall be provided in the Galley. The outer face of joiner bulkheads panels fitted in the Galley shall be stainless steel satin finish.
NLTP -724	Linings and false ceilings shall be installed in a manner that will not impede damage control efforts.
NLTP -725	Joiner work that conceals vents, piping and wiring, must provide access as required.
NLTP -726	Full accessibility to components requiring access for inspection, maintenance or operation must be maintained.
NLTP -727	Where necessary for frequent access or inspection, ceilings/linings shall be provided with portable or hinged access panels with latch fastening.
NLTP -728	Access panels shall: - Not be covered by fittings or systems; - Be easily removable and replaceable; - Be large enough to allow any valves that they cover to be removed as well as operated; and - Not require special keys or tools to open them and have securing arrangement that are captive.
NLTP -729	All joiner bulkheads, linings and ceilings shall be approved TCMS products.
NLTP -230	<i>1.4.6.4 066.4 Furniture Standards</i>
NLTP -731	Furniture shall be commercial design, modular construction, free of sharp edges and burrs and suited for marine environment shipboard use.
NLTP -732	Large articles of furniture shall be mounted on sub-bases and secured at top and sides by hasps where possible.
NLTP -733	The furniture shall not be rigidly attached to non-structural or joiner bulkheads.
NLTP -734	Maximum use of low maintenance materials and finishes for ease of cleaning should be incorporated into all accommodation furnishing.
NLTP -735	All materials selected for furnishings shall have properties to reduce flame spread.
NLTP -736	All berths, drawer units, lockers, sideboards and dining tables support shall be constructed from metal and semi-gloss baked enamel finish.
NLTP -737	Where furnishings of dissimilar metals are adjacent to each, or the ship's structure, suitable isolation between them shall be provided.
NLTP -738	Vinyl upholstery shall not be used.
NLTP -739	Accommodation upholstery shall be a woven fabric and shall be fire retardant, washable and fastened to frame with non-corrosive attachments.
NLTP -16	1.5 070 - GENERAL REQUIREMENTS FOR DESIGN AND CONSTRUCTION
NLTP -69	1.5.1 071 Access

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NLTP -231	<i>1.5.1.1 071.1 General</i>
NLTP -741	There should be no direct access from a machinery space to berthed accommodation.
NLTP -742	Arrangements shall be provided to give access for examination, painting and cleaning to all compartments in the vessels by means of approved doors, manholes, scuttles or bolted plates.
NLTP -743	Electrical cable and piping shall be kept clear of all access areas.
NLTP -744	The accommodation, machinery spaces, working areas and other normally manned spaces shall have at least two means of escape.
NLTP -745	For spaces below the main deck, the main means of escape shall be a stairway or inclined ladder.
NLTP -1987	For spaces below main deck, the second escape may be a trunk or a stairway.
NLTP -746	For spaces above the main deck, the means of escape shall be stairways, inclined ladders, or doors to an open deck.
NLTP -232	<i>1.5.1.2 071.2 Passageways</i>
NLTP -747	Passageways shall have a minimum clear width of 900 mm.
NLTP -748	The width of doorways and passageways shall be adequate to allow the removal of furniture and galley equipment.
NLTP -749	The minimum clear deckhead height below the services or false ceilings and above any false decks shall be at least 2.10 m in all habitable spaces, working spaces and passageways.
NLTP -233	<i>1.5.1.3 071.3 Ladders and Stairways</i>
NLTP -750	The clear opening of all doors to stairs and ladders shall be at least equal to the actual stair width.
NLTP -751	All access openings shall have suitable rounded corners and shall be effectively framed.
NLTP -2140	Stairways shall be used in all areas where regular access is required. Ladders shall be used only where access requirements are infrequent or if space does not permit the application of a stairway.
NLTP -752	The width of all stairways and inclined ladders shall be a minimum of 560 mm.
NLTP -753	Stairways shall be aligned in the fore and aft direction.
NLTP -754	Stairways outside the machinery spaces shall have a maximum angle of inclination from the horizontal of 45° with handrails.
NLTP -755	Stairways inside machinery spaces and exterior, shall have an angle of inclination from the horizontal not more than 50° with handrails.

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NLTP -1988	Guard rails shall be provided in the machinery space and other operation areas as required for safety of operations.
NLTP -2168	Vertical ladders shall have a minimum width of 450 mm.
NLTP -234	<i>1.5.1.4 071.4 Doors, Hatches and Manholes</i>
NLTP -757	Dimension of clear openings to escape/access hatch on deck shall not be less than 580 mm x 580 mm or 580 mm diameter.
NLTP -758	All escape/access hatches shall be of the quick-acting type, hinged with counterweight and with locking arrangement such that the hatch can be opened from either side.
NLTP -759	Manholes with a diameter of least 600 mm shall be provided for tanks, voids spaces, chain lockers, and cofferdams.
NLTP -1989	Each manhole cover shall have welded identification with letters/figures not less than 40 mm high identifying the tank/space/cofferdam/ void and its contents, i.e. fuel oil, lub oil, salt water ballast, etc.
NLTP -1990	A similar identification shall be welded to the tank structure adjacent to manhole opening.
NLTP -760	At least two manholes, located well apart, shall be fitted to each structural tank or enclosed space.
NLTP -761	Manholes shall be secured with steel studs/bolts and nuts. Bolts and nuts shall be of stainless steel.
NLTP -762	Hinged closures (doors and hatches) installed on exposed decks, as far as practical, should be hinged on the forward side.
NLTP -763	Doors should not open into passageways.
NLTP -764	All doors shall have a clear opening height of 2050 mm above the deck or false deck.
NLTP -765	Hatches should hinge up against the structure to avoid obstruction of passages or deck areas and means for securing the hatch open shall be provided.
NLTP -766	Flush deck manholes should be used in the interior in way of working, walking or operating areas, where above deck projections create a personnel hazard.
NLTP -767	Manholes in machinery space shall have raised coamings, not less than 100 mm high.
NLTP -768	All hatch covers and manholes covers shall be as strong as the surrounding deck structure. Manhole covers shall be fitted with lifting handles wherever practical.
NLTP -769	All hatches shall be operable by one person from above and below.
NLTP -235	<i>1.5.1.5 071.5 Access for Maintenance</i>
NLTP -770	The machinery and equipment arrangement shall provide an adequate and safe accessible maintenance envelope.
NLTP -771	Access to all routine maintenance items shall be provided

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NLTP-1991	Access to all routine maintenance items shall not require the removal or disassembly of any equipment.
NLTP-772	Removal routes shall be provided for all machinery and equipment, excepting main engines or other equipment which can be shown to be repaired in-situ.
NLTP-773	The oil dipsticks for all equipment or engines, gearboxes, and other machines shall be accessible.
NLTP-774	Lifting points shall be provided on equipment and the ship structure.
NLTP-70	1.5.2 073 Noise and Vibration
NLTP-775	Bridge equipment shall not emit noise louder than 75dB. The most frequent source of high ambient noise levels are radar, gyro power supplies, ventilation fans, air conditioners, wiper motors and transformers.
NLTP-776	Consideration should be given to the reduction of noise by situating power supplies in an electrical cabinet/equipment space or in noise insulated cabinets.
NLTP-777	Rotating equipment and machinery shall be selected to have the lowest practicable noise level at normal operating speeds.
NLTP-778	A cabinet or stowage of three muff-type hearing protection devices shall be installed near the entrance to any normally unmanned space with noise level that can exceed 85dB(A).
NLTP-779	Where the level of noise is 85 dB(A) or more or where the peak level of impulse noise exceeds 140 dB(A), permanent signs, in both official languages, shall be posted warning persons entering the spaces.
NLTP-71	1.5.3 074 Casting, Welding, Riveting and Allied Processes
NLTP-782	The structural members within the hull bottom or in other areas where water may collect (keel, keelson, bottom girders and stiffening, engine and reduction gear foundations to shell plating) shall have double continuous welds.
NLTP-1992	All welding will be double continuous in all exposed areas, including weather decks.
NLTP-783	Engine foundations, oiltight and watertight bulkheads, integral tanks, and exterior structure and fittings shall be double continuous weld.
NLTP-784	All butt joints shall meet the requirements of a classification society and be properly prepared, free of cracks, and lack of fusion.
NLTP-785	Types and sizes of welds shall meet Regulatory Body requirements.
NLTP-787	Non-Destructive Examination of welds shall be in accordance with Regulatory Body requirements.
NLTP-788	Limber holes and scallops in the bottom area or in other areas where water may collect shall be welded all around to seal faying surfaces.
NLTP-72	1.5.4 076 Availability, Reliability and Maintainability
NLTP-236	1.5.4.1 076.1 Availability

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NLTP -789	<p>Table 5 provides a maximum average annual usage profile per tug:</p> <table border="1" data-bbox="337 352 1114 835"> <thead> <tr> <th colspan="4" data-bbox="337 352 1114 382">Table 5 - Maximum Average Annual Usage per Tug:</th> </tr> <tr> <th data-bbox="337 382 542 562">Activity</th> <th data-bbox="542 382 634 562">Maximum Average Annual Usage per Tug (weeks)</th> <th data-bbox="634 382 695 562">Time %</th> <th data-bbox="695 382 1114 562">Comments</th> </tr> </thead> <tbody> <tr> <td data-bbox="337 562 542 592">Harbour Work</td> <td data-bbox="542 562 634 592">44</td> <td data-bbox="634 562 695 592">84</td> <td data-bbox="695 562 1114 592"></td> </tr> <tr> <td data-bbox="337 592 542 667">Out of Harbour Work</td> <td data-bbox="542 592 634 667">1</td> <td data-bbox="634 592 695 667">2</td> <td data-bbox="695 592 1114 667">The maximum days out-of-harbour for both coasts over a five year sample study was 25 days (5 tugs)</td> </tr> <tr> <td data-bbox="337 667 542 743">Maintenance Periods</td> <td data-bbox="542 667 634 743">4</td> <td data-bbox="634 667 695 743">8</td> <td data-bbox="695 667 1114 743">Each tug is projected to undergo two, two-week maintenance periods (total: four weeks) each year.</td> </tr> <tr> <td data-bbox="337 743 542 798">Refits</td> <td data-bbox="542 743 634 798">3</td> <td data-bbox="634 743 695 798">6</td> <td data-bbox="695 743 1114 798">Average. Each tug is projected to undergo one 15-week refit at five-year intervals.</td> </tr> <tr> <td data-bbox="337 798 542 835">Total</td> <td data-bbox="542 798 634 835">52</td> <td data-bbox="634 798 695 835">100</td> <td data-bbox="695 798 1114 835"></td> </tr> </tbody> </table>	Table 5 - Maximum Average Annual Usage per Tug:				Activity	Maximum Average Annual Usage per Tug (weeks)	Time %	Comments	Harbour Work	44	84		Out of Harbour Work	1	2	The maximum days out-of-harbour for both coasts over a five year sample study was 25 days (5 tugs)	Maintenance Periods	4	8	Each tug is projected to undergo two, two-week maintenance periods (total: four weeks) each year.	Refits	3	6	Average. Each tug is projected to undergo one 15-week refit at five-year intervals.	Total	52	100	
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NLTP -790	Excluding docking cycle requirements, the NLT shall have full operational availability of no less than 85%. Note: Non-availability (maintenance periods) periods include short work periods, docking work periods and refits.																												
NLTP -792	Equipment, machinery and materials shall be selected to ensure reliable vessel operations for 2,000 hours of annual operations.																												
NLTP -793	The vessel shall be able to fulfill its primary mission requirements when operated a maximum of 10 hours in a 24-hour period for 10 day missions.																												
NLTP -794	The engine rating shall also be based on an engine Load Profile of 50% (to a maximum of 10 hours in a 24-hour period) at rated rpm and typical up to 2,000 hours/year.																												
NLTP -237	<i>1.5.4.2 076.2 Reliability</i>																												
NLTP -795	The ship systems shall be designed and configured to have compensating provisions that can mitigate the effect of critical failure.																												
NLTP -797	The vessel's systems must be designed in order to be withstand a single critical failure.																												
NLTP -799	<p>To achieve a high operational availability for the ship, the selection of material and equipment shall be based in part on the in-service maintenance concepts of:</p> <ul style="list-style-type: none"> - Repair by Replacement of defective components or assemblies that eliminates the requirement for component repair on board; and - Maintain by Exchange of the complete equipment where Repair by Replacement is too time consuming, complex or inhibited by post repair testing requirement. 																												
NLTP -238	<i>1.5.4.3 076.3 Maintainability</i>																												
NLTP -802	<p>The tugs' shall be designed to:</p> <ul style="list-style-type: none"> - minimize the frequency and duration of maintenance periods; - as far as practicable, allow the conduct of preventative maintenance without affecting operations and operational availability; and 																												

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	- have preventative and corrective maintenance, as much as practicable, not be conducted by core crew.
NLTP -73	1.5.5 077 Safety
NLTP -803	The vessels shall be designed to provide a safe and comfortable working environment for the crew.
NLTP -804	The interface between the vessels and shore shall be designed to provide safe accessible embarkation and disembarkation of the complement to and from the vessels.
NLTP -805	The vessels shall have a First-aid station furnished with first-aid supplies and equipment in accordance with the Marine Occupational Safety and Health Regulations conveniently located in the superstructure.
NLTP -807	Permanent Warning and Danger signs, in both official languages, shall be posted for identifying hazardous devices and for area demarcation, where applicable.
NLTP -74	1.5.6 078 Materials
NLTP -811	All the materials, machinery, equipment and outfitting for all purposes throughout the vessels, shall conform to the following basic requirements: - Shall be certified by an appropriate Nationally Recognized Test Laboratory e.g. Underwriter's Laboratories (ULC), or Canadian Standards Association (CSA), or - be in accordance with applicable Regulatory Body standards.
NLTP -812	High-tensile or specialty steel shall not be used in the superstructure.
NLTP -813	All steel plates, sections and castings shall be new.
NLTP -814	All steel plates and sections shall have the manufacturer's name and test marks clearly stamped on them.
NLTP -815	Steel plate shall be shipbuilding steel approved by a Regulatory Body, with steel shapes in accordance with ASTM 131.
NLTP -816	Materials for all system piping and the associated components shall be selected to minimize the effect of galvanic corrosion.
NLTP -817	All galvanized pipe spools shall be re-galvanized after fabrication.
NLTP -820	All hoses shall be as per SAE J1942 Hose and Hose Assemblies for Marine Applications. Hoses shall also comply with CSA 90-264 Schedule IX.
NLTP -821	Cold galvanizing compounds shall not be used.
NLTP -75	1.5.7 079 Seaworthiness
NLTP -239	1.5.7.1 079.1 Stability and Subdivision
NLTP -823	This vessel shall meet or exceed the intact and damage stability criteria for type III vessels as specified in the Canadian Forces Technical Order Stability and Buoyancy Requirements for Surface Ships (C-03-001-024/MS-002).

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NLTP -2133	The vessel shall comply with STAB 3 from TP 7301 and the Canada Shipping Act 2001, “Hull Construction Regulations”, C.R.C., c1431 (PART VIII Ships Built or Converted for Towing)
NLTP -17	1.6 080 - INTEGRATED LOGISTIC SUPPORT REQUIREMENTS
NLTP -76	1.6.1 081 Maintenance
NLTP -824	The tugs’ systems shall be chosen with simplicity of operation and maintenance as prime considerations.
NLTP -825	The vessels shall be delivered with all the manufacturer’s recommended spares.
NLTP -78	1.6.2 088 Personnel and Training
NLTP -827	The tugs shall be designed to a specification that entails minimal training and familiarization.
NLTP -828	Systems are to be robust, yet simple, to minimize the level of technical competence required for minor fault finding and troubleshooting.
NLTP -829	Equipment shall correspond to specifications that are typically found in commercial tugs.
NLTP -830	Highly specialized, unique, and complex equipment shall be avoided.
NLTP -18	1.7 090 - QUALITY ASSURANCE REQUIREMENTS
NLTP -79	1.7.1 092 Ship Test
NLTP -240	<i>1.7.1.1 092.1 General</i>
NLTP -249	<i>1.7.1.2 092.10 Lifting Points</i>
NLTP -850	Lifting points shall be tested and marked accordingly.
NLTP -2	2 GROUP 1 - HULL STRUCTURE
NLTP -19	2.1 110 - SHELL AND SUPPORTING STRUCTURE
NLTP -82	2.1.1 111 Shell Plating
NLTP -250	<i>2.1.1.1 111.1 General</i>
NLTP -856	All plates to be used should be as long a length as practicable and shall be continuously butt-welded.
NLTP -857	To avoid propeller induced vibration, the lowest natural frequency of stiffened bottom shell plating in the forward third of the vessel shall be at least 25% greater than the maximum propeller blade rate frequency.

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NLTP-858	The sheer strake and the deck stringer plates shall be free of cuts, gouges, arc strikes or other irregularities.
NLTP-859	A minimum of 75 mm clearance shall be provided between the longitudinals and the longitudinal seams of plating.
NLTP-860	Bottom and side longitudinals, if fitted, shall be made continuous with butt welds. The longitudinal, and any longitudinal butt welds, shall be at least 75 mm away from any shell plate butts.
NLTP-251	<i>2.1.1.2 111.2 Drain Plugs</i>
NLTP-861	Docking drain plugs shall be located to ensure proper draining of the compartments built into the hull.
NLTP-862	Drain plugs shall be of stainless steel type 316 and fitted at lowest point of all tanks, voids and cofferdams and as approved by the owner.
NLTP-863	Drain Plugs shall be arranged so that the plug does not protrude outside the surface of the shell plating, and be fitted in pads or inserts at least 18 mm thick.
NLTP-864	A complete set of spare plugs shall be provided with each vessel together with the key that is required for their installation and removal.
NLTP-2001	Potable water tank plugs shall be of a different diameter and use a different shaped key than plugs for all other tanks.
NLTP-866	All drain plugs shall have a means incorporated into them that allows the contents of the tank or compartment being drained to be identified and sampled without complete removal of the plug.
NLTP-83	<i>2.1.2 114 Shell Appendages</i>
NLTP-867	If applicable, a protection (propeller guard) will be fitted under the propellers constructed out of welded plates and shaped according to the directions and with the approval of the propeller maker.
NLTP-868	If applicable, final location of the propeller guard, and the associated anodes shall be approved by the technical authority and the propeller manufacturer representative.
NLTP-869	Bilge keels shall be fitted for roll reduction.
NLTP-84	<i>2.1.3 115 Pillars and Stanchions</i>
NLTP-870	Pillars and stanchions should be landed on structural framing members and aligned with the webs of the supporting structure in the longitudinal and transverse planes.
NLTP-20	<i>2.2 120 - HULL STRUCTURAL BULKHEADS</i>
NLTP-361	<i>2.2.1 120.1 Watertight Bulkheads</i>
NLTP-871	The number of openings in watertight bulkheads should be kept to a minimum.
NLTP-2000	All bulkheads shall be vertically stiffened using toe-welded angle or flat bars.

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NLTP -252	2.2.2 123 Trunks and Enclosures
NLTP -873	Chain locker(s) shall be sized to accommodate the chains and cables and to give at least 1-metre headroom when cables are stowed.
NLTP -874	Chain locker(s) shall be fitted with perforated removable floor plates suitably stiffened at a height of 150 mm above the bottom of the locker.
NLTP -875	Access to the chain locker(s) shall be within the vessel fore peak by means of a hinged manhole.
NLTP -876	Chain lockers(s) shall be divided with a non-watertight centreline bulkhead with semi-circular holes in line with access manholes to act as toe and hands holes when inspecting the locker(s).
NLTP -877	The bitter end connections shall be located at the top of the locker(s), in protected but accessible locations to permit emergency release of the chain.
NLTP -878	The bitter end connection shall be designed for shear failure under a runaway chain load equal to the breaking strength of the anchor chain.
NLTP -879	The bitter end connections shall be sufficient to withstand at least 20 percent above the proof load of the cable chain.
NLTP -2185	The bitter end load shall not be less than twice the anchor and chain weight.
NLTP -21	2.3 130 - HULL DECKS
NLTP -880	Deck longitudinals shall be butt-welded throughout with the longitudinal butts separated from any deck butt by at least 75mm.
NLTP -881	Openings should be kept to a minimum in particular in the strength decks within the 3/5 length amidships.
NLTP -882	Decks and supporting structure shall be re-enforced as required in way of winches, bollards, windlasses, cranes and all other deck equipment and machinery fitted.
NLTP -2002	Use of double plating shall be avoided. Where necessary, thicker plate shall be used.
NLTP -22	2.4 150 - DECK HOUSE STRUCTURE
NLTP -883	The boundaries of all superstructures shall be of weathertight construction.
NLTP -884	Casings, houses, bulkheads, and other surfaces shall be fair, without buckles, kinks, or other objectionable surface irregularities.
NLTP -885	Where trunks penetrate decks, the deck cuts shall have rounded corners.
NLTP -23	2.5 160 - SPECIAL STRUCTURES
NLTP -85	2.5.1 161 Structural Castings, Forgings
NLTP -886	All the finished forgings and castings shall have manufacturer identification markings and test certificates stating the results of mechanical test and details of heat treatment.

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NLTP -887	Hawse pipes shall be provided for the anchors. The hawse pipe design shall ensure positive starting of the anchors and overhaul of the chain upon release under all ordinary conditions of list and trim.
NLTP -888	The ends of the hawse pipes shall be suitably finished.
NLTP -889	Chain pipes shall extend from the windlass bedplate to the approximate centre of the chain locker, with large bellmouths on bottom and deck bolsters as supplied or recommended by the windlass manufacturer on top.
NLTP -890	Suitable arrangement or bonnet/cover plate shall be provided to stop water on deck flooding the chain lockers.
NLTP -891	Construction of the hawse pipes and chain pipes shall be of ample thickness, size, and form for efficient anchoring, suitably rounded edges shall be provided to prevent chafing.
NLTP -892	The hawse pipes shall be of ample diameter and length to house the anchor stock and shackle.
NLTP -86	2.5.2 163 Sea Chests
NLTP -893	Suction sea chests shall be arranged and located in accordance with TCMS and/or Class requirements as applicable so as not to take in air trapped under bilge keels or from emergence on the maximum expected roll of the ship in Sea State 5, at minimum operating draft, and to avoid pickup of effluent from overboard discharges.
NLTP -894	Hull side sea suction grilles shall be fitted where applicable.
NLTP -895	The net free area of the grille must be at least twice the area of the sum of all suction pipes connected to the sea chest.
NLTP -896	The largest dimension of the grille perforation shall be smaller than the smallest suction pipe connected to the sea chest to prevent fouling of the sea chest isolation valve.
NLTP -87	2.5.3 167 Hull Structural Closures
NLTP -897	Closures shall be appropriate to the location, use and integrity of the space served, and shall be equivalent in strength and tightness to the adjacent structure.
NLTP -898	The weathertight doorsill height and weathertight hatch coaming height shall be appropriate to the locations of the closures.
NLTP -899	All watertight and airtight doors, hatches, and scuttles and all drop-bolt type manhole covers shall be fitted with retained gaskets. The closures and the retaining devices shall be constructed to hold the gaskets securely in place.
NLTP -900	Gaskets material shall be suitable for service in contact with oil, seawater, and fresh water and shall not be painted.
NLTP -24	2.6 170 - MASTS, KINGPOSTS AND SERVICE PLATFORMS
NLTP -88	2.6.1 171 Mast

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NLTP-903	The mast and supporting structure shall be designed to sustain a wind load of 80 knots, the weights of the structure and equipment and the dynamic inertia loads due to ship motion.
NLTP-902	A mast shall be fitted to carry radars, antennae, navigating lights and signals IAW COLREGS.
NLTP-2005	The mast can be of the folding type to allow tugs to operate under the flare of warships. Folding arrangement can be automatic or manual. If manual, the mast must be folded and unfolded by one person in not more than 10 minutes.
NLTP-2003	The mast structure and the associated platforms and overhangs shall be designed to provide rigid foundations to support the electronic navigation equipment such as radar and antennae.
NLTP-2004	The magnitudes of vibration shall be reduced to levels compatible to the environmental qualifications of the installed equipment to avoid excessive induced stress in the equipment and to minimize the movements of the equipment for the proper functioning of the equipment.
NLTP-904	The first mast fundamental frequency shall be kept a minimum of 25% above the highest of the following: shaft rate, blade rate and the 2-noded vertical mode of the hull frequency to ensure against the high amplitude motions associated with resonance.
NLTP-905	Yards, spreaders, and gaffs, with platforms and brackets shall be provided as necessary for all navigation, communication, and signal equipment. They shall be of steel pipe and plate and be designed to be completely self-supporting with all equipment in place.
NLTP-906	Sufficient cleats for signal halyards shall be provided. Standing rigging should be reduced to a minimum.
NLTP-907	A safe means of climbing the mast shall be permanently attached to the mast structure, and a suitable fall arrest harness provided.
NLTP-25	2.7 180 - FOUNDATIONS
NLTP-253	2.7.1 180.1 General
NLTP-909	Machinery foundations shall be integrated with the bottom structure, transverse frames, longitudinals, girders and keelson. The natural frequency of machinery/equipment foundations shall not coincide with the blade rate frequency at any speed up to the maximum speed, and/or the exciting frequency of the supported machinery in conjunction with resilient mounts (if used).
NLTP-910	Adequate chocks for machinery alignment shall be arranged.
NLTP-911	The rigidity of machinery foundations and adjacent supporting structure shall be sufficient to prevent either permanent or transient hull deflection of enough magnitude to interfere with operation of the machinery and equipment.
NLTP-912	The machinery foundations shall have a rigidity greater than that of any drive shaft line to ensure that none of the components of the drive shaft line are stressed beyond their limits when flexing of the hull occurs.

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NLTP-913	Foundations shall be provided for all auxiliary machinery and equipment in the machinery space and on decks and shall be of adequate construction to prevent vibration.
NLTP-914	Decks shall be reinforced in way of equipment and machinery as required.
NLTP-915	Foundations shall be arranged in such way to provide adequate clearance for servicing and disassembling modules or parts such as pumps, filters, valves and pistons without dismantling other machinery, structure or piping.
NLTP-3	3 GROUP 2 - PROPULSION
NLTP-26	3.1 230 - PROPULSION UNITS
NLTP-89	3.1.1 233 Propulsion Internal Combustion Engines
NLTP-916	The main propulsion system shall consist of twin diesel engines operating between 500 and 1200 rpm driving propulsion lines.
NLTP-917	Each diesel engine shall have its own Original Equipment Manufacturer supplied pre-heater and pre-lube pump and its own lube oil, fresh water-cooling and seawater systems.
NLTP-918	There shall be no interconnection between two engines lube oil, fresh water or seawater systems.
NLTP-2006	Seawater systems of the two diesel engines may be connected to a common sea chest.
NLTP-919	If the engines are fitted with a charge/intake air cooler, they shall in turn be cooled via the respective engine fresh water circuitry.
NLTP-920	The engine shall be provided with all accessories recommended by the manufacturer for continuous service at sea and shall be installed complete with all attached and unattached auxiliaries.
NLTP-921	The engine's crankcase evacuation system shall be of a design approved by the engine manufacturer and may be directed to the respective engine's air inlet downstream of the air filter.
NLTP-922	The engines may have power take offs suitable for the use of the firefighting pumps.
NLTP-923	The main engines shall be suitable for operation in an unattended engine room.
NLTP-924	It shall be possible to start the engines either locally from the engine room or remotely from the wheelhouse.
NLTP-926	Means shall be provided to terminate the starting cycle and disengage the starter once the engine has reached idle or a self-sustaining speed as specified by the OEM.
NLTP-2169	The installation of the engines shall include a check or non-return valve to prevent reverse flow of cylinder gases to the air start reservoir if an air start system is selected.
NLTP-928	If recommended by the engine manufacturer, means shall be provided to prime the engine lubricating oil system as part of the starting cycle.

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NLTP-929	Block and oil pan heaters shall be provided based on the engine manufacturer's recommendations.
NLTP-930	The block heaters shall be capable of maintaining the engine jacket water at 10°C under the most adverse standby conditions in the climatic condition specified.
NLTP-27	3.2 240 - TRANSMISSION AND PROPULSOR SYSTEMS
NLTP-90	3.2.1 241 Propulsion Reduction Gears
NLTP-931	The port and starboard shafting arrangements shall be identical except that the gearbox shall be configured to rotate the propellers as per the manufacturer's recommendation.
NLTP-932	The transmission(s) shall be designed to accept the maximum rated output power of the prime mover(s).
NLTP-91	3.2.2 242 Propulsion Clutches and Couplings
NLTP-933	Removable couplings shall be bored to accommodate necessary number of bolts and carefully machined for proper fitting to shaft taper.
NLTP-934	Any hydrodynamic coupling shall be a constant oil filling type. If fitted, they shall be installed and approved in accordance with the propellers manufacturer's recommendations.
NLTP-92	3.2.3 243 Propulsion Shafting
NLTP-937	Shafting shall be of suitable diameter and strength to transmit the main engine full horse power at stated rpm and also necessary over strength for possible shock when vessel is navigating in debris infested water.
NLTP-938	Shafting shall be highly polished at bearings and turned smooth elsewhere.
NLTP-939	If fitted, cardan shafts shall be installed as per the manufacturer's instructions and shall have a minimum installed angle recommended by the manufacturer.
NLTP-93	3.2.4 244 Propulsion Shaft Bearings
NLTP-254	<i>3.2.4.1 244.1 General</i>
NLTP-940	The arrangement of shafting, and the number and location of line shaft bearings shall be governed by the shaft alignment and vibration analysis.
NLTP-942	Each line of shafting shall have a bearing mounted as closely as possible to the Turbo coupling.
NLTP-255	<i>3.2.4.2 244.2 Bulkhead Glands</i>
NLTP-944	If any section of the propulsion shafting penetrates a watertight bulkhead, a bulkhead gland shall be fitted.
NLTP-945	The gland shall be steel provided with renewable bronze neck bush.

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NLTP -946	Gland, cap, and bush shall be made in halves for easy removal.
NLTP -947	Suitable number of packing turns shall be provided to afford integrity in case of flooding.
NLTP -948	The whole unit shall be suitably assembled and bolted on a bulkhead plate made also in halves and suitably gasketed.
NLTP -949	A grease nipple shall be fitted on each gland.
NLTP -950	A grease gun shall be provided and clipped against the bulkhead in the proximity of glands.
NLTP -94	3.2.5 245 Propulsors
NLTP -954	The propulsors shall be installed as per the manufacturer's instructions.
NLTP -2170	The propulsors shall be suitable for tug boat operations and have proven performance in tug boats currently in operation.
NLTP -2009	The propulsors shall have a manufacturer representative approve the final installation on each vessel.
NLTP -2008	The propulsors shall have proven performance in past ship builds to carry out tug boat operations
NLTP -956	If applicable, the propulsors shall have the recommended sacrificial anodes installed as per the manufacturer's instructions.
NLTP -28	3.3 250 - PROPULSION SUPPORT SYSTEMS
NLTP -95	3.3.1 251 Combustion Air System
NLTP -962	The ship shall be provided with efficient air supply and exhaust systems for the main diesel engine, ship's service diesel generators, and any diesel driven fire pump(s).
NLTP -964	Combustion air intakes for the main diesel engines, diesel generator(s) and the FiFi I diesel prime mover (if fitted) shall be supplied by a dedicated supply and exhaust trunk leading from the machinery space through the upper deck and superstructure to the exterior.
NLTP -965	Demisters shall be fitted to minimize seawater spray and precipitation ingress under all design conditions.
NLTP -966	The intake grills should be positioned, if practicable, to face astern.
NLTP -967	The trunks shall be provided with suitable drainage and access for cleaning.
NLTP -968	Combustion air shall be conditioned to supply air in accordance with the engine manufacturer's recommendations in all Operating Environments.
NLTP -96	3.3.2 252 Propulsion Control System

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NLTP -969	The main engines and propulsors shall be electronically controlled from the BCC and shall form an integrated propulsion and steering control system. The integrated system shall be approved by the engine manufacturer, the propulsor manufacturer.
NLTP -970	Wherever practical, wiring connection to the control consoles shall be in harnesses.
NLTP -256	<i>3.3.2.1 252.1 Bridge and Machinery Control Consoles (General)</i>
NLTP -971	Control consoles shall be ergonomically designed to provide a clear presentation of ship's machinery status.
NLTP -972	The control consoles shall have a battery backup to permit equipment monitoring in the event of a power loss so no single fault, failure of power supply or system malfunction will prevent the retention of effective console control.
NLTP -973	All indicators shall be lighted and be capable of dimming to fully dark, with the exception of alarm indicators when alarmed.
NLTP -974	All indicators on the exterior shall be watertight.
NLTP -2010	All indicators on the Bridge and the exterior shall be visible in full sunlight.
NLTP -975	There shall be as a minimum the following control modules duplicated within both the Bridge Control Console and the Machinery Control Console: <ul style="list-style-type: none"> - Propulsion control and monitoring; - Electrical power generation and distribution control and monitoring; - Auxiliary systems (pump/valve automation, tank gauging etc) control and monitoring; - Propulsor System control and monitoring; - Alarms and fault detection; - Data and event logging with printing capability; - FiFi Monitor control; - Running hours and hourly recording of engine minimum, maximum and average load; and - Winch and Tow equipment controls.
NLTP -976	Machinery control and monitoring shall be conducted from the Machinery Control Console.
NLTP -977	The NLT's Master will control the vessel from the Bridge Control Console.
NLTP -978	The main propulsion system shall respond to throttle control orders, from the BCC, over the complete range of plant operation without the intervention of engineering watch personnel.
NLTP -979	Both the main propulsion engines and propulsor thrust direction shall be controlled from the BCC, via a single throttle head connected to individual throttle control levers for each engine and propulsor unit.
NLTP -980	The BCC shall provide remote control and information display of the machinery plant and provide audible and visual alarm displays to indicate faults in machinery and related systems or equipment.

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NLTP -362	3.3.2.1.1 252.1.1 Bridge Control Console
NLTP -981	<p>The BCC shall have, as a minimum, the following for Propulsion:</p> <ul style="list-style-type: none"> - Key switch, - Engine start, - Engine control lever, - Propulsion engine synchronisation selection and indication, - Engine stop button, - Engine tachometers, and - Engine lubricating oil pressure and temperature.
NLTP -982	<p>The BCC shall also have, as a minimum, the following for other systems:</p> <ul style="list-style-type: none"> - Visual alarm for high tank content for the oily water tank and the black and grey tank, - Fuel oil tanks contents gauges and low level alarm, - Fresh water tanks content gauge, - Alarm reset, - Indicator light test (lamp test).
NLTP -363	3.3.2.1.2 251.1.2 Machinery Control Console
NLTP -983	<p>The MCC shall have, as a minimum, the following for Propulsion:</p> <ul style="list-style-type: none"> - Engine stop button, - Audible and visual alarm for engine lubricating oil low pressure, - Audible and visual alarm for the diesel engines high crankcase pressure, - Indication of engine cooling water pressure, - Indication of engine cooling water temperature, - Engine cooling water high temperature alarm, - Indication of engine cooling water level, - Indication of engine exhaust gas temperature, - Hour meter, - Propeller/shaft tachometer, - Gearbox lubricating oil pressure, - Audible and visual alarm for gearbox low lubricating oil pressure, - Gearbox lubricating oil temperature with high temperature alarm, and - Engine over speed alarm and trip.
NLTP -984	<p>The MCC shall have, as a minimum, the following for Electrical:</p> <ul style="list-style-type: none"> - Generator remote start/stop button or switch, - Generator running light, - Prime mover engine tachometer, - Generator over speed and emergency trip, - Generator over speed and emergency alarm, - Prime mover engine oil pressure with low pressure alarm, - Prime mover engine cooling water temperature with high temperature alarm, - Hour meter and fuel consumed meters, - Generator shut down alarms,

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	<ul style="list-style-type: none"> - Instrumentation for controlling/monitoring electric supply (e.g., ammeter, voltmeter, frequency meter, circuit breaker) to the main switchboard, - Shore power connected indicator, - DC Power “On” light, and - Battery charger charging voltmeter.
NLTP -985	The MCC shall be linked to a dedicated printer and provided with hard disk and removable disk drives for secure, non-volatile storage of the bell log, all alarms, warnings, and machinery parameters for at least six months.
NLTP -364	<i>3.3.2.2 252.2 Local Control</i>
NLTP -987	Engines, generators, pumps and auxiliary equipment shall be fitted with local control panels in accordance with TCMS and/or Class society requirements as applicable.
NLTP -2011	All local control panels shall contain the entire manufacturers standard and recommended instrumentation and shall include local start/stop, lockable switches to disable start for use during inspection or maintenance, and monitoring gauges (such as oil pressure and temperature, fresh water temperature gauges, seawater pressure and temperature gauges, and tachometer with running hour meter).
NLTP -988	<p>The local control panels to be fitted with automatic sequential push button operation of the equipment and necessary indications and alarms, and will include as a minimum:</p> <ul style="list-style-type: none"> - On/Off - Throttle control - Directional control - start/stop at pumps - pumps running - lamp test - fault alarm - Emergency Stop - Indication Lamp
NLTP -989	When equipment is placed under local control, both remote starting and control console commands shall be automatically isolated.
NLTP -97	<i>3.3.3 256 Circulating and Cooling Water Systems</i>
NLTP -990	All diesel engines shall be cooled by a closed circuit self-contained fresh water systems in which the jacket water is circulated by means of an attached engine driven pump.
NLTP -991	Lubricating oil coolers shall be cooled by fresh water.
NLTP -992	The fresh water system shall be cooled by seawater circulated through jacket water heat exchangers.
NLTP -993	Fail-safe devices shall be provided to automatically control the fresh water-cooling temperature.
NLTP -994	Thermostatically controlled, immersion type jacket water heaters shall be provided to maintain coolant at a temperature recommended by the engine manufacturer when the engines are not running.

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NLTP-995	Materials used in the fresh water system shall be compatible with the inhibitors concentration level as specified by the engine manufacturers.
NLTP-996	Test points shall be provided in the fresh circulating water system.
NLTP-997	Vents and drains shall be provided at high and low points of the systems and on pump casings.
NLTP-2012	The discharge from these point shall be piped clear of equipment.
NLTP-998	Seawater circulated through jacket water heat exchangers should be supplied from a sea chest through a duplex intake strainer provided with isolating valves.
NLTP-999	An emergency cross connection with the vessel's auxiliary seawater service system shall be provided.
NLTP-1000	All parts of the cooling system in contact with sea water shall be of corrosion resistant material.
NLTP-1001	Jacket water heat exchangers shall be installed and provided with the necessary fittings so as to allow draining down, venting and complete access for cleaning and maintenance without disturbing other equipment.
NLTP-1002	Suitable sacrificial anodes shall be fitted in all heat exchangers for two calendar years of continuous operation.
NLTP-1003	Inlet strainers shall be fitted on each suction line.
NLTP-1004	A seawater strainer shall be installed for each engine between the sea valve and the circulating pump.
NLTP-1005	The strainer shall be located so that it is accessible for servicing and does not obstruct access for maintenance of other equipment.
NLTP-1006	Arrangements for de-icing and clearing of a fouled inlet grille of sea chests shall be provided.
NLTP-1007	All suction sea chests shall be fitted with vent lines from the top of the chest terminating at the weather deck with goosenecks.
NLTP-1008	Sea chest anodes shall be sized for two years of continuous service.
NLTP-98	3.3.4 259 Uptakes
NLTP-1009	The NLT's exhaust stack(s) shall be situated to allow clear vision forward and aft, especially for close-in operations.
NLTP-1010	The installation of the diesel exhaust system shall comply with the engine manufacturer's recommendations.
NLTP-2013	The installation of the diesel exhaust system shall be in accordance with IMO Res A.468(XII) and SOLAS regulation II-1/3-12.
NLTP-1011	Each engine exhaust outlet shall be provided with stainless steel expansion bellows to the engine supplier's recommendation.
NLTP-1012	Piping and silencers shall be secured in such a way as to permit thermal expansion and motion of the engines.

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NLTP-1013	The exhaust system shall be installed with supports to prevent excessive loading of the flexible connections and expansion joints, and to effectively isolate the system from the ship's structure.
NLTP-1014	Flexible sections shall be installed at the engine exhaust outlets to permit engine mounting/vibration isolator removal.
NLTP-1015	Each engine must be fitted with a seamless stainless steel spark arresting exhaust silencer complete with clean-out ports, drain pot, drain valve, and drain line.
NLTP-2151	The exhaust gases of each engine shall exit through the spark arresting exhaust silencers.
NLTP-1016	Stainless steel exterior spark arrestors shall be fitted if required by the engine manufacturer.
NLTP-1017	Exhaust tips must be made from stainless steel.
NLTP-1018	The hot surfaces of the exhaust system from engines to silencers and the silencer bodies shall be insulated with flexible insulating blankets.
NLTP-1019	The exhaust system shall not run through habitable spaces.
NLTP-2014	The exhaust system shall be designed such that it does not interfere with the launching and recovery operations of the Fast Rescue Craft.
NLTP-1020	Arrangements shall be provided for soot collection and removal.
NLTP-2015	Arrangements shall be provided to prevent spray or rain water ingress into the exhaust system.
NLTP-99	3.3.5 262 Lubricating Oil System
NLTP-1021	Lubrication oil shall be provided to the diesel engines, gearboxes and prime movers for and generator sets as recommended by the manufacturers.
NLTP-2016	The lubricating oil system shall comply with CSA (SOR/90-264, Schedule XIV).
NLTP-1022	The lubricating oil supply for each engine shall be completely independent and self-contained.
NLTP-1023	The same type of lubricating oil shall be used for all the systems, if approved by the manufacturers. Should it be necessary to utilise different lubricating oils for any two systems, the alternate lubricating oil shall be approved by the technical authority and the equipment manufacturer.
NLTP-2171	Under normal operating conditions, lubricating oil shall be supplied to the engine under pressure by a lubricating oil service pump.
NLTP-1026	Lubricating oil coolers, circulating/prelube pumps, purifiers, heaters, filters, tanks, valves, sampling cocks, piping, fittings, strainers, and instrumentation shall be provided, as required, for main engine and auxiliary equipment.
NLTP-1027	The filters must have elements conforming to engine manufacturer's specification.
NLTP-2017	The filters shall be conveniently located to facilitate filter change.

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NLTP -1028	A relief system shall be provided external to the filter casing to bypass oil around the filter if the filter becomes clogged.
NLTP -1029	The lubricating oil systems for each diesel shall be supplied by or conform to the engine manufacture's specifications.
NLTP -1030	An independent main lubricating oil system shall be supplied if required.
NLTP -1031	The lubricating oil transfer system shall allow transfer of oil from storage tank(s) to the diesel sumps.
NLTP -1032	The minimum combined capacity of the storage tank(s) shall be sufficient for one complete oil change of all diesels and gearboxes plus 20%.
NLTP -1033	If OEM requirements result in the use of multiple types of lubricating oil, separate clean lubricating oil tanks shall be appropriately sized and provided for each type of oil.
NLTP -1034	The dirty oil drain system shall have separate dirty oil tanks for used oil.
NLTP -1035	Transfer of oil from engine sumps to dirty oil tanks shall be via no-drip quick disconnect fittings on each engine with flexible suction hoses.
NLTP -1036	The dirty oil tank shall be capable of holding all the oil removed from one complete oil change for all diesels, gear boxes, bearing(s) plus 20%.
NLTP -1037	The dirty oil tanks shall be capable of discharge to shore by hand pump through a deck connection.
NLTP -1038	Tanks that supply make-up oils for engines shall be provided of the type, capacity and general location as recommended by the equipment manufacturers.
NLTP -1039	All tanks in the system shall be provided with approved oil level indicators, sounding tubes, filling pipes, ventilation, manholes, cleanout holes, as required and all necessary connections and fittings.
NLTP -1040	The storage tank(s) shall have a lockable drain valve and suitable drip tray under.
NLTP -1041	A filling station, complete with saveall, shall be provided on the main deck
NLTP -2018	The filling station shall be fitted with a deck connection with screwed cap and flush deck plate.
NLTP -2019	The filling station shall have sufficient deck area to handle a 45 gallon drum.
NLTP -1042	The filling line to the storage tank(s) shall be fitted with a fine mesh strainer with removable element and drain. This line shall incorporate a flexible detachable section between the mesh strainer and tank valve.
NLTP -1043	The lubricating oil storage tank shall have a rundown valve and distribution line terminating at a stop valve convenient to each main propulsion and generator engine.
NLTP -1044	A length of quick connecting flexible hose terminating in a spring-loaded cock or nozzle shall be used to introduce oil into the engine sump.
NLTP -1045	A low volume electric pump, with a hand pump in parallel, shall be provided for supplying oil to diesel sumps.

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NLTP -1046	This pump shall have the capability of draining and discharging oil from the storage tank(s) to shore.
NLTP -1047	The transfer system for diesel engines lubricating oil shall be segregated from other lubricating oil transfer systems.
NLTP -1048	The lubrication oil filling and transfer system shall be designed such that the transfer of used oil shall not be via the clean oil piping.
NLTP -4	4 GROUP 3 - ELECTRIC PLANT
NLTP -29	4.1 310 - ELECTRIC POWER GENERATION
NLTP -100	4.1.1 311 Ship Service Power Generation
NLTP -1049	Each diesel engine shall have a normal continuous capacity at its marine rating sufficient to meet the rating of its generator.
NLTP -1050	If resilient mounted, the generator and its prime mover shall be on a common rigid frame that is suitable for resilient mounting on a foundation.
NLTP -1051	Each diesel engine driving the ship's service generators shall be capable of burning the same diesel oil and be lubricated by the same lubricating oil as the propulsion main engines.
NLTP -1052	The generator engines should be the same manufacturer as the main propulsion engines.
NLTP -1053	Anti condensation heaters shall be supplied integral with all generators.
NLTP -1054	The engine shall be provided with all accessories recommended by the manufacturer for continuous service at sea and shall be installed complete with all attached auxiliaries.
NLTP -101	4.1.2 313 Batteries and Service Facilities
NLTP -257	4.1.2.1 313.1 Uninterruptible Power Supplies (UPS)
NLTP -1055	Uninterruptible Power Supplies (UPS) shall be provided for essential systems, including: general alarm and public address systems, fitted VHF radio, fire detection/extinguishing and alarm systems, emergency lighting, and other vital systems such as machinery control and communications in accordance with TP 127E.
NLTP -1056	The Uninterruptible Power Supplies shall be designed for an input voltage of 600V, 60 Hz.
NLTP -2021	Batteries shall be sealed, suitable for deep discharge cycling and shall have sufficient capacity to provide the rated output for at least 15 minutes.
NLTP -2022	UPS units shall be constructed in accordance with IEC 62040 or an acceptable and relevant National or International Standard.
NLTP -1057	The UPS shall provide power with a steady static voltage variation of less than + 2 percent and a frequency variation of less than + 0.25 percent.
NLTP -1058	There shall be an automatic, no-break battery back up with minimum 15 minutes duration.

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	Upon the loss of ship's power, the UPS shall transfer seamlessly and continue to operate on battery power, providing full power to the essential systems. Upon restoration of ship's power to the input of the UPS, the UPS shall transfer load continuously back to the normal input and return to standby/charging.
NLTP -258	<i>4.1.2.2 313.2 Batteries and Charging Systems</i>
NLTP -1060	Batteries and Charging Systems shall be designed and installed as DC power supply for the following three systems: <ul style="list-style-type: none"> - Group 1 Main engine starting; - Group 2 Generator set engine and fire pump engine starting; and - Group 3 Emergency power supply.
NLTP -1061	Group 1 and 2 batteries shall be located as close as practicable to the engines concerned.
NLTP -1062	Each set of Group 1 and Group 2 batteries shall be sized to have sufficient capacity to meet requirements for main engine starting.
NLTP -2023	Each set of Group 1 and Group 2 batteries shall be sized to have sufficient capacity to meet requirements of TP127E for main engine starting.
NLTP -1063	Group 3 batteries shall provide power for the emergency 24 V DC system including the following items as minimum: <ul style="list-style-type: none"> - All communication equipment, - Navigation lighting, - Emergency lighting, - Fire detection system, and - Alarm and Monitoring.
NLTP -1064	The capacity of the Group 3 set(s) shall be sufficient to maintain the voltage of the battery throughout the discharge period within +12% its normal voltage or within the tolerance of the supply voltage for electronic equipment critical to safety of the vessel, whichever is the least.
NLTP -1065	The Group 3 battery sets shall be installed outside the machinery spaces.
NLTP -1066	Batteries and their associated charging facilities shall be installed and adequately vented in accordance with TP127.
NLTP -1067	Battery chargers, certified for marine application, shall be of constant voltage type, fully automatic, featuring float/boost charge arrangements and be selected/sized to suit the application.
NLTP -1068	The battery charging system shall be capable of restoring the batteries to the fully charged state in not more than eight hours.
NLTP -1069	The battery chargers shall be equipped with, as a minimum, "on/off" switch, power "on" indicating light, voltmeter, ammeter, boost operation indicator, manual boost override, protection against overload and overcharging.
NLTP -1070	Each set of Group 1 and 2 batteries shall have no other connected loads and shall be provided with a dedicated battery charger.

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NLTP -1071	One portable battery charger shall be provided for charging spare batteries of any size fitted on the vessel.
NLTP -102	4.1.3 314 Power Conversion Equipment
NLTP -259	<i>4.1.3.1 314.1 Transformers</i>
NLTP -1072	All transformers shall be single phase, dry type, rated at least Class B, and installed in drip-proof enclosures.
NLTP -2024	Transformer ratings shall be standardized as much as practical.
NLTP -1073	Transformers are to comply with the requirements of one of the following standards: - IEC 60076, - IEC 60092-503, or - An acceptable and relevant National Standard as determined by Class.
NLTP -1074	Isolation transformers shall be fitted to the shore supply system. Converters are to comply with the requirements of IEC 60146, or an acceptable and relevant National Standard.
NLTP -260	<i>4.1.3.2 314.2 Static Converters</i>
NLTP -1075	Static Power Converters shall be used, as required.
NLTP -2025	Converters shall comply with the requirements of IEC 60146, or an acceptable and relevant National Standard.
NLTP -30	4.2 320 - POWER DISTRIBUTION SYSTEM
NLTP -1077	The Primary Power Distribution system is the preferred supply for all equipment above 1 kW.
NLTP -2026	The power distribution system shall be installed with switchboards, transformers, panel boards, cabling, breakers and receptacles in accordance with the Regulatory Body approved single line diagram and all related drawings.
NLTP -103	4.2.1 321 Ship Service Power Cables
NLTP -261	<i>4.2.1.1 321.1 Shore Connection</i>
NLTP -1078	Watertight shore connections conveniently located on the weather deck and readily accessible to shore cables from either side of the ship shall be provided to accept 450 V, 3 phase, 60 Hz power.
NLTP -1079	The shore connection boxes shall be at least 0.5 metres above the deck and shall be located in weather protected areas to ensure the portable supply cables do not impede weather deck walkways or interfere with deck activities on both the port and starboard sides.
NLTP -1080	The 450 V supply shall be provided with a 46 m interconnecting cable of suitable type for the ship-to-ship or ship-to-shore connections.

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NLTP -1081	Polarized plug receptacles on board and ashore shall be fitted on the cables.
NLTP -1082	Shore cables shall be appropriately marked to indicate 450 V service.
NLTP -1083	Stowage reels, weatherproof caps for the connectors and weatherproof stowage for the cables shall be provided on-board.
NLTP -1084	An indicating light (white) and a phase sequence indicator shall be provided on the connection boxes to indicate shore power bus energized.
NLTP -1085	The shore connection shall be provided with an indicator at the main switchboard in order to show when the cable is energized. A voltmeter and voltmeter switch shall be provided for reading each phase voltage of the shore connection.
NLTP -1086	Nameplates shall be provided to clearly identify the connection boxes.
NLTP -1087	A bilingual warning plate instructing personnel to isolate all supplies prior to working within the enclosure shall also be provided on each connection box.
NLTP -1088	All shore power connections shall be provided with a ground connection terminal for connecting the vessel's hull to the shore ground.
NLTP -1089	The shore connection plugs shall be sized to suit the expected harbour load and shall be compatible with the existing shore power receptacles fitted at CFBs Halifax and Esquimalt. The 450V, 400 amp facilities at CFB Halifax and Esquimalt have three, single phase NEMA 4X (IP56) watertight receptacles.
NLTP -2172	A shore connection for low pressure air, telephone, DWAN, internet and fire alarm pull station shall be fitted port and starboard.
NLTP -104	4.2.2 324 Switchgear and Panels
NLTP -262	4.2.2.1 324.1 Switchboards
NLTP -1091	The ship service generator and distribution switchboards shall be arranged for operation of generator circuit breakers and for distribution of power as required.
NLTP -1092	The main switchboard shall be installed in an accessible and well-ventilated location with the access entrances, and operating and maintenance clearances in accordance with IEEE 45 but not less than TP127.
NLTP -1093	Switchboards shall be the dead front, floor-mounted type, steel constructed and surface coated.
NLTP -1094	Insulated handrails installed horizontally or vertically shall cover the full length of the switchboard.
NLTP -1095	A non-conducting deck covering, mat or grating shall be provided on the deck at the front and rear of any switchboard, extending the entire length of the switchboard.
NLTP -1096	All bus bars shall be rectangular section, hard drawn copper, and all bus bar connections, studs, bolts, and similar connecting devices shall be silver-plated after machining to ensure minimum contact resistance over extended periods. Bus bars and all connections shall be marked either A, B, C for the three phases.

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NLTP -1097	The switchboards shall be mounted in accordance with the manufacturer's recommendations and TP127E requirements.
NLTP -1098	Ground fault indication shall be incorporated at each voltage level.
NLTP -1099	Unless the switch is required to be of the momentary type, switches for instrument transfer or control functions shall be of the rotary type and shall be provided with a positioning device to securely hold the switch in the selected position,
NLTP -1100	The main bus bars of the switchboard supplying the propulsion machinery and essential services are to be capable of being isolated by a multi-pole linked circuit breaker, disconnecter, or switch-disconnector into at least two independent sections.
NLTP -2027	In the event of the loss of one section or failure of the power supply from one generator, there must be continuity of sufficient electrical power to supply essential services.
NLTP -1101	Fuses shall be readily accessible.
NLTP -1102	Terminal blocks shall be provided for terminating all external connections.
NLTP -2174	Terminals block shall be selected to be capable of withstanding the thermal and mechanical effects of short-circuit currents.
NLTP -1103	Switchboards shall be provided with an insulated handrail or insulated handles suitably fitted on the front of the switchboard for the removal of circuit breakers.
NLTP -1104	The switchboard shall have 10% of each rating/size of distribution breakers as spares with a minimum of two of each type.
NLTP -1105	Facilities required for remote control and monitoring of the electrical equipment from the Machinery Control Console shall be provided in the switchboard.
NLTP -1106	<p>Each generator control section of the switchboard shall contain the following, properly connected with any other devices required for the proper control and protection of each generator:</p> <ul style="list-style-type: none"> - Generator set start/stop, - One AC ammeter, - One ammeter switch to select phase A, B, C, - One AC voltmeter, - One voltmeter switch to select phase AB, BC, and CA, - One polyphase wattmeter, - One reverse power relay, - Generator voltage and frequency adjust controls, - Breaker open/close controls, - One breaker closed light (blue), - One breaker open light (white), and - Transformers, circuit breakers, fuses, transducers and relays as required.
NLTP -1107	<p>The synchronizing section of the switchboard shall contain the following, properly connected with any other devices required:</p> <ul style="list-style-type: none"> - One bus voltmeter energized via the mode switch, - One bus frequency metre energized via the mode switch, - One incoming frequency metre energized via the control/select switch,

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	<ul style="list-style-type: none"> - One synchroscope energized via the mode switch, - Two synchronizing lamps (synchronized when dark, clear lens) energized via the mode switch, - One synchronizing control/select switch to provide control of incoming generator or shore supply circuit breaker, - One incoming voltmeter, - One automatic paralleling device, - One synchronizing mode switch to select the following parallel modes: <ul style="list-style-type: none"> (1) Ship Service Generator 1 to Generator 2, (2) Ship Service Generator 2 to Generator 1, (3) Ship service Bus to shore supply, and (4) Off. - Ship's service insulation monitoring for 450V, and 115 V systems, - A transformer for 450v to 600v conversion for power distribution shall be fitted to the switchboard. The switchboard must be able to receive 450 and 600v, not simultaneously. - One switchboard lamp check switch, - One synchronizing check relay to prevent paralleling unless all conditions are met, - One automatic paralleling energized indication light (white), and - One synchro-check relay energized light (white).
NLTP -1108	<p>The shore supply portion of the switchboard shall contain the following, properly connected together with any other devices required:</p> <ul style="list-style-type: none"> - One moulded case circuit breaker with motor operator, 3 pole complete with auxiliary contacts, - Breaker open/close controls, - Two indicating lights – circuit breaker open (amber) and closed (blue), - One shore power available light (white), - One phase sequence indicator, - One AC voltmeter, - One AC voltmeter switch to select phase AB, BC and CA, - One AC ammeter, showing both incoming and outgoing current, - Instrument and control transformers as required, and - Isolation transformers.
NLTP -1109	<p>The system shall be capable of paralleling any ship's service generator with shore power for a period of 5 minutes, to effect power transfer from ship's service to shore power or vice versa.</p>
NLTP -263	<p><i>4.2.2.2 324.2 115 Volt Receptacles</i></p>
NLTP -1110	<p>General-purpose receptacles, 15 amp for 115/1/60 power, duplex U-ground type, shall be provided as follows:</p> <ul style="list-style-type: none"> a) Each compartment, except hazardous areas in which outlets are prohibited, shall have at least one receptacle for every 8 square metres; b) Accommodation cabins, sanitary compartments and mess room shall have at least one receptacle for each of the following: <ul style="list-style-type: none"> - Mirror,

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	<ul style="list-style-type: none"> - Berth, and - For every 3 metres (linear) of bulkhead, or fraction thereof. <p>c) In addition to (a) above, maintenance stations, internal and external, shall have at least one receptacle;</p> <p>d) Additional receptacles shall be installed as required for plug-in units such as toasters, coffee makers, microwave oven, entertainment equipment, test equipment, portable tools, communication equipment, computers and all other electrical appliances.</p>
NLTP -1111	The receptacles shall be Canada Standard Association approved.
NLTP -1112	There shall not be more than 6 receptacles per circuit.
NLTP -1113	Receptacles on the upper deck, in the galley, wash places, propeller compartment, engine room, rope store and generator compartment shall be hard wired through watertight junction boxes. All receptacles in store areas and machinery spaces where high humidity or dripping may occur should be hard wired and watertight.
NLTP -1114	As a minimum, four exterior watertight power receptacles, two each side port and starboard located at the forward and the aft end of the superstructure on the main deck, shall be installed for general utilities purposes.
NLTP -1115	Each of the four external watertight power receptacles shall be on a separate circuit.
NLTP -1116	As a minimum, two exterior watertight power receptacles shall be provided on the wheelhouse exterior, one each port and starboard side.
NLTP -1117	Each of the two exterior watertight power receptacles on the wheelhouse exterior shall be on a separate circuit.
NLTP -31	4.3 330 - LIGHTING SYSTEMS
NLTP -105	4.3.1 332 Lighting Fixtures
NLTP -264	<i>4.3.1.1 332.1 Specific Lighting Requirements</i>
NLTP -365	4.3.1.1.1 332.1.1 Wheelhouse/Bridge
NLTP -1118	All illumination in the wheelhouse shall be capable of being dimmed to black as a group except the lighting of alarm and warning indicators and the controls of dimmers which are to remain readable.
NLTP -1119	The bridge shall be equipped with red illumination in addition to the standard fixtures for use at night.
NLTP -1120	The Chart Table shall be provided with supplementary dimmable lighting, one fixture for each 1.5 metres section of the chart table, complete with an amber filter to produce at least 500 lux at the table undimmed.
NLTP -366	4.3.1.1.2 332.1.2 Accommodation

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NLTP -1121	Each cabin shall be provided with a minimum of: - One LED type overhead fixture for general illumination, controlled by a switch at the entrance; - a desk light in way of each desk; - a mirror light over each mirror; and - a berth light at the head of each bunk.
NLTP -2028	All light fixtures shall be flush mounted with the ceiling unless otherwise specified
NLTP -367	4.3.1.1.3 332.1.3 Machinery Space
NLTP -1122	All general lighting shall be LED. In special circumstances, lighting should be augmented with incandescent units.
NLTP -1123	Drip proof light fixtures shall be installed in all machinery spaces.
NLTP -1124	Machinery space lighting shall be switched at all entrances to the compartment.
NLTP -368	4.3.1.1.4 332.1.4 Store Rooms and Storage Spaces
NLTP -1125	Lights illuminating store spaces shall be housed in drip proof guarded fixtures.
NLTP -1126	Switches adjacent to access entry, outside of the space, shall control the lighting for storage spaces.
NLTP -369	4.3.1.1.5 332.1.5 Workshops
NLTP -1127	General overhead workshop lighting shall be LED with two adjustable incandescent type fixtures mounted at the workbench.
NLTP -370	4.3.1.1.6 332.1.6 Exterior
NLTP -1128	Fixtures shall be placed to illuminate ladders, walkways, obstructions, abrupt changes in deck level and other hazards to personnel safety.
NLTP -1129	Fixtures shall be shaded to prevent excessive light spillage.
NLTP -1130	Control for all exterior lighting shall be from the Bridge.
NLTP -1131	All external lighting shall operate at rated output across the full range of ambient air temperatures in which the tugs are expected to operate in.
NLTP -1132	All externally mounted fittings shall be of salt-water resistant construction and watertight.
NLTP -1133	Deck lighting and exterior lights shall be watertight incandescent types with guards that shield the light's glare from interfering with navigation and visibility ahead.
NLTP -1134	Exterior fixtures shall be connected to the ship's service power via through-bulkhead fittings, such that the cabling runs internal to the hull.
NLTP -1135	Portable fixtures shall be provided to illuminate each gangway.

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NLTP -2029	Connections for portable fixtures shall be provided so that when connected wires are clear of personnel paths.
NLTP -371	4.3.1.1.7 332.1.7 Floodlights
NLTP -1136	Six floodlights, watertight, corrosion resistant, and at least 500w types shall be provided, mounted on the superstructure (3 fwd and 3 aft), to illuminate the entirety of the forward and aft working decks. Floodlights shall meet the requirements of IEEE Std 45 and be certified to UL-1598A.
NLTP -1137	Four of the floodlights shall be fixed (2 fwd and 2 aft).
NLTP -1138	Two of the floodlights (1 fwd and 1 aft) shall be remote activated from within the Bridge and be capable of 270 degrees rotation.
NLTP -1139	The operator shall have the ability to select which deck is illuminated.
NLTP -1140	The lights shall be oriented and/or shaded so they do not shine or backscatter into the bridge.
NLTP -1141	One portable floodlight with 3-metre power cord and watertight plug shall be mounted on a portable boom that can be rigged to illuminate target recovery areas positions port and starboard, rescue boat launch and recovery positions, as well as over the stern without interfering with the Deck Crane operation.
NLTP -1142	Stowage for the portable floodlight and portable boom shall be provided onboard near the rescue boat launch and recovery position.
NLTP -1143	Watertight receptacles shall be arranged for the portable floodlight supplies and control shall be from a convenient location, if practicable, from the conning position in the Bridge.
NLTP -372	4.3.1.1.8 332.1.8 Searchlights
NLTP -1144	Two searchlights shall be fitted.
NLTP -1145	Each searchlight shall be a minimum of 250,000 candelas.
NLTP -1146	All searchlight functions shall be individual and controlled via joysticks from a remote panel mounted on the MCC or BCC.
NLTP -1147	The searchlights shall be capable of moving through a minimum of 360-degree horizontal sweep and a minimum of 35-degree vertical sweep.
NLTP -1148	The searchlights shall be mounted as high as practical.
NLTP -1149	Search beam blockage from other mounted equipment or superstructure shall be minimized as much as practical.
NLTP -5	5 GROUP 4 - COMMAND & SURVEILLANCE
NLTP -32	5.1 420 - NAVIGATION SYSTEMS

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NLTP -106	5.1.1 421 Non-Electrical Navigation Aids
NLTP -1151	One illuminated standard magnetic compass, with dial size of at least 200 mm diameter, and one spare identical magnetic compass shall be provided.
NLTP -1152	The magnetic compass shall comply with the requirements of TP3668E and IMO Resolution "A.382(X).
NLTP -2030	Conductors and equipment must be placed at such a distance from the magnetic compasses, or are to be so disposed, that the interfering magnetic field is negligible when circuits are switched on and off.
NLTP -1154	As a minimum, the following aids to navigation shall be provided with each tug: - Four pairs binoculars, Power x Object Diameter 7x50, with double lanyard - One set of collapsible shapes; - One full set of International code flags suitable for the mast height carried in a stowage cabinet with a lockable door; - One depth sounding lead line; - One portable, splash proof loudhailer; - Fog horn; - Accessories as necessary to permit proper use of chart and the determination of position;
NLTP -2031	A mounted Clinometer, bubble-in-tube type, must be provided in both the Wheelhouse and the Machinery Space.
NLTP -1155	Hoisting arrangements shall be provided for displaying the day shapes and international code flags.
NLTP -2032	A waterproof flag locker, with routinely used signal flags and shapes IAW COLREGSm shall be situated near the halfyards.
NLTP -107	5.1.2 422 Navigation Lights
NLTP -1156	Navigation lights conforming to TP1861 Standards for Navigation Lights, Shape, Sound Signals Appliances and Radar Reflectors shall be installed and located to comply with TCMS Collision regulations C.R.C., c.1416.
NLTP -1157	Navigation light circuits shall be independent of any other circuits.
NLTP -1158	The following, as minimum, shall be included: - Anchor light; - Masthead lights; - Stern Light - Towing Light - Sidelights - Not-under-command lights The vessel shall also be fitted with a blue flashing light. The blue flashing light shall interface with an integrated alarm panel to provide visible indication in the unmanned alarm condition.

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NLTP -1159	A central control panel for all navigation lights shall be fitted at the BCC.
NLTP -1160	The navigation lights panel controlling the functions of all navigation lights shall be solid state and modular design constructed.
NLTP -1161	The panel shall have normal/alternate power supplies, with automatic transfer to the alternate.
NLTP -1162	The light panel shall be provided with automatic tell tale indicators to give a visual and audible signal in the event of failure of any one light bulb element, and the visual indication shall remain until the fault is rectified, even though the alternate light bulb element is in use.
NLTP -108	5.1.3 423 Electronic Navigation Systems Above Water
NLTP -265	<i>5.1.3.1 423.1 Electronic Positioning Fixing</i>
NLTP -1163	A Differential Global Positioning System (DGPS), satellite navigation shall be provided.
NLTP -1164	The DGPS shall provide the vessel's position to the ship's ECDIS.
NLTP -1165	A Global Positioning System (GPS) shall be installed capable of supplying a secondary input to the ECDIS.
NLTP -1166	The DGPS shall be installed at the chart table.
NLTP -266	<i>5.1.3.2 423.2 Electronic Chart Display & Information System (ECDIS)</i>
NLTP -1167	The vessel shall be fitted with an Electronic Chart Display and Information System (ECDIS) or equivalent.
NLTP -1168	The ECDIS shall be compliant with the International Maritime Organization (IMO) (Resolution A.817(19)), and the International Hydrographic Organization (IHO) standard in force at entry into service.
NLTP -2033	The ECDIS shall support current RCN navigation software.
NLTP -1169	The ECDIS shall provide a real-time display of the tug's position on the appropriate electronic chart display in BCC and support current RCN navigation software;
NLTP -1170	An ECDIS system shall be installed with DGPS input and radar overlay.
NLTP -2034	An ECDIS system shall be installed with GPS input and radar overlay.
NLTP -1171	The real-time display shall be fitted in the BCC.
NLTP -1172	The system shall interface with the autopilot, navigation inputs from DGPS, gyrocompass, speed log, echo sounder, automatic radar plotting aids, navigational radar, automatic identification system, and anemometer(s).
NLTP -267	<i>5.1.3.3 423.3 Automatic Radar Plotting Aids (ARPA)</i>

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NLTP -1174	An ARPA system shall be installed and the system shall provide interface with the ECDIS in order that information on a specific ARPA contract can be displayed on the ECDIS.
NLTP -1175	The ARPA system shall comply with requirement of IMO Resolution A.823(19).
NLTP -268	<i>5.1.3.4 423.4 Automatic Identification System (AIS)</i>
NLTP -1176	The vessel shall be fitted with an automatic identification system (AIS) capable of providing to ships and to authorities information from the ship, automatically and with the required accuracy and frequency to facilitate accurate tracking.
NLTP -1177	AIS system shall comply with requirement of IMO Resolution MSC.74 (69), annex 3.
NLTP -1178	The AIS shall provide AIS information to the ship's ECDIS.
NLTP -1179	Display for AIS shall be fitted in the BCC.
NLTP -269	<i>5.1.3.5 423.5 Autopilot System</i>
NLTP -1180	An automatic pilot system shall be installed.
NLTP -1181	The system shall be monitored by an off-course alarm addressed to the master, in case of malfunction.
NLTP -1182	An overriding control device that shall allow change-over from automatic to manual control of the ship's steering without delay shall be provided at the BCC.
NLTP -109	<i>5.1.4 424 Electronic Navigation Systems Underwater</i>
NLTP -270	<i>5.1.4.1 424.1 Speed and Distance Log</i>
NLTP -1183	A speed and distance log system shall be installed.
NLTP -1184	The speed and distance log system will supply the ship's velocities in digital format and direction, with respect to the ocean bottom, at low ship's speed in relatively shallow water and with high resolution.
NLTP -1185	Numeric displays shall be located in the BCC.
NLTP -1186	The speed log system shall provide the vessel speed information to the ship's ECDIS.
NLTP -1187	The speed log system is to be used directly by the ARPA as an aid to collision avoidance.
NLTP -271	<i>5.1.4.2 424.2 Depth Sounder</i>
NLTP -1188	One recording type depth finder with fore and aft transducers capable of providing accurate depth indication to a maximum depth of at least 350 meters with a high contrast LED display and a recorder shall be provided.

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NLTP -1189	The echo sounder system with a shallow depth alert shall be capable of paper recording, and on-demand electronic recording and storage of data for the depth(s), temperature and position.
NLTP -1190	The echo sounder display shall be located in the BCC's Navigation Workstation.
NLTP -110	5.1.5 427 Inertial Navigation Systems
NLTP -1191	A gyro compass system shall be provided with a centreline pelorus.
NLTP -2035	The Gyro Compass system must be compatible with repeaters.
NLTP -1192	The Gyro Compass System shall comply with the requirements of TP3668E and International Maritime Organization Resolution "A.424(XI).
NLTP -1193	A numeric repeater shall be fitted at the following locations; the BCC to permit the helmsman easy viewing, on the forward Bridge bulkhead at deckhead level, and at the emergency steering position.
NLTP -1194	The master gyro compass, with manual latitude correctors shall be installed in the Bridge.
NLTP -1195	The gyro compass system shall provide digital heading data to the ship's Electronic Chart Display and Information System (ECDIS) and other systems as required.
NLTP -1196	The placement of the helmsman's gyro repeater and the magnetic compass shall allow the master to use either display for steering operations.
NLTP -33	5.2 430 - INTERIOR COMMUNICATIONS
NLTP -1197	The interior communication systems shall be installed to provide voice transmission from the Bridge to appropriate stations around the ship.
NLTP -1198	This system master control shall be located on the Bridge in a dedicated panel at the BCC.
NLTP -1199	The Bridge shall have priority over the communication system.
NLTP -111	5.2.1 432 Telephone Systems
NLTP -272	5.2.1.1 432.1 Automatic Telephones
NLTP -1200	An automatic telephone exchange system shall be installed consisting of a centrally located automatic switchboard connected to telephones at the following locations: - Bridge; - Mess; and - Master's and Chief Engineer's cabins.
NLTP -1201	A watertight telephone connection box shall be provided in a protected location accessible, port and starboard, for connection to shore telephone line.
NLTP -273	5.2.1.2 432.2 Sound Powered Telephone

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NLTP -1202	A Sound Powered Telephone System shall be installed as a backup for emergency communications between operational stations as follows: - Bridge; - Engine Room
NLTP -112	5.2.2 433 Announcing Systems
NLTP -274	<i>5.2.2.1 433.1 Public Address System</i>
NLTP -1203	The public address system shall be a part of the Talkback Broadcast/Intercom System.
NLTP -1204	The public address system shall comply with the requirements of IMO SOLAS regulation III/6.5.
NLTP -1205	The Public Address System shall be capable of providing adequate sound coverage to overcome ambient noise in the machinery room, accommodation spaces, stores, mess, fore deck area and aft deck area.
NLTP -275	<i>5.2.2.2 433.2 Talkback Broadcast/Intercom System</i>
NLTP -1206	An Upper Deck Broadcast System shall be supplied complete with volume control and sufficient out stations to co-ordinate operations aboard the vessel.
NLTP -1207	Talkback loudspeakers and talkback stations, with plug-in handsets, shall be fitted at the Bridge and at the main deck forward and aft.
NLTP -2036	The talkback loudspeakers and talkback stations shall execute override.
NLTP -113	5.2.3 436 Alarm, Safety and Warning Systems
NLTP -1208	An integrated digital alarm and monitoring system for the main engines, diesel generator(s), propulsion units and switchboard shall be fitted.
NLTP -2037	The alarm and monitoring system shall include tank level indication, fire detection and general alarm as distinct features.
NLTP -1209	All alarms shall be arranged in such a manner as to identify the particular fault condition (such as failure of the lubricating oil system) and its location within the machinery space.
NLTP -1210	Installation shall comply with TCMS and Class requirements and CSA (SOR/90-264, Schedule XIII).
NLTP -2038	Where an alarm system could be adversely affected by an interruption in power supply, changeover to the stand by power supply shall be achieved without a break.
NLTP -1211	Alarm display units shall be located at the consoles, engine room, chief engineer's cabin.
NLTP -2175	All alarms shall be compliant with a regulatory authority.
NLTP -276	<i>5.2.3.1 436.1 Fire Detection and Bilge Level Alarms</i>

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NLTP -1212	An alarm system shall be installed to provide bilge level detection and fire detection.
NLTP -1213	Bilge level sensors shall be installed in each watertight compartment for high bilge level detection.
NLTP -2039	The number of and location of sensors shall ensure bilge water is detected at all angles of heel and trim.
NLTP -1214	Bilge level and fire detection systems shall operate from a control and alarm panel located in the Bridge and shall be incorporated into the MCC.
NLTP -1215	The bilge level and fire alarm system shall incorporate a selector switch for an unmanned ship condition which, in the event of an alarm, will cause the ship's horn to be sounded and activate the weatherproof flashing blue beacon on the top of the ship's mast until the alarm is acknowledged.
NLTP -1216	The system shall provide as a minimum the following features: - Audible and visual high and high-high bilge level alarms for each monitored compartment; - Audible and visual alarm for high temperature and smoke for the engine room; machinery space and any other monitored compartments as may be required by the Regulatory Body; - Remote discharge of fixed firefighting systems; - Indicator light on monitoring panel to indicate the alarm system is energized; - Manned/unmanned mode switch; and - Output to alarm via the ship's horn and blue beacon light in the unmanned mode.
NLTP -1217	Audio and visual alarm shall be activated at the Bridge Control Console and machinery space automatically.
NLTP -277	<i>5.2.3.2 436.2 General Alarm</i>
NLTP -1218	An audible general alarm shall be provided throughout all the accommodation and crew working spaces, and integrated with the public address system.
NLTP -114	<i>5.2.4 437 Indicating, Order and Metering Systems</i>
NLTP -278	<i>5.2.4.1 437.1 Ship's Electric Clock System</i>
NLTP -1219	An electric clock system shall be provided consisting of a master control on a Bridge bulkhead and a second clock with shatterproof lenses provided in the Mess Room.
NLTP -1220	The ship's clocks should be non-striking, standard size marine, battery backed, clocks with analog scales and have quartz crystal workings.
NLTP -1221	The clock located in the Bridge shall be externally illuminated with a small red dimmable spotlight.
NLTP -279	<i>5.2.4.2 437.2 Tank Level Indication</i>
NLTP -1222	Tank level indicators shall be provided to serve the following tanks: - Fuel Oil Tanks - Fresh Water Tanks - Lubricating Oil Tanks

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	<ul style="list-style-type: none"> - Ballast Tanks - Oily Waste Holding tanks, Waste Oil tanks - Black Water Holding Tanks - Grey Water Holding Tanks
NLTP -1223	Individual readouts shall be provided at the Machinery Control Console.
NLTP -1224	High level alarms sensors shall be provided for fuel storage and service tanks, waste oil tank, lubricating oil storage tank, waste water holding tanks and ballast tanks.
NLTP -1225	High and low level control sensors shall be fitted with the oily waste holding tank.
NLTP -1226	The high and low level sensors may be integrated into the appropriate tank level-indicating unit.
NLTP -1227	Sight glass level indicators, with suitable guards, shall be provided for all pressurized tanks, such as, chilled water expansion tanks, potable water hydro-pneumatic tank(s) and freshwater cooling system expansion tanks, if fitted.
NLTP -34	5.3 440 - EXTERIOR COMMUNICATIONS
NLTP -115	5.3.1 441 Radio Systems
NLTP -280	<i>5.3.1.1 441.1 General</i>
NLTP -1228	The exterior radio communications system shall consist of the following: <ul style="list-style-type: none"> - (1) VHF radio installation; - (1) MF/HF dual radio transceiver system.
NLTP -281	<i>5.3.1.2 441.2 Global Maritime Distress and Safety Systems</i>
NLTP -1229	The vessel shall be equipped with ship station and radio equipment for a Global Maritime Distress and Safety System (GMDSS) for Sea Area 1. As a minimum, the vessel's GMDSS shall consist of the following: <ul style="list-style-type: none"> - (1) VHF radio installation capable of receiving and transmitting voice communications and communication using Digital Selective Calling (DSC) and each capable of dual-channel monitoring, - (1) Radar transponder – Marine search and rescue - (SART) for Life Saving Equipment Requirement where applicable, - (1) Emergency Position Indicating Radio Beacons (EPIRB), - (1) NAVTEX receiver, - One Search and Rescue VHF radio direction-finding apparatus, and - An associated Antenna System.
NLTP -1230	GMDSS equipment shall be certified by Innovation, Science, Economic Development Canada and tested by a country to which the SOLAS convention applies, where applicable.
NLTP -116	5.3.2 443 Visual and Audible Communication Systems

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NLTP -282	<i>5.3.2.1 443.1 Ships Whistle</i>
NLTP -1231	The vessels whistle shall be compliant with COLREGS and SOLAS and shall be capable of being operated from the Bridge.
NLTP -1232	The whistle system shall interface with an integrated alarm panel to provide audible indication when the vessel is in an unmanned condition.
NLTP -1233	The whistle shall be operable during a power failure by 24V DC.
NLTP -283	<i>5.3.2.2 443.2 Ships Bell</i>
NLTP -1234	One brass or bronze marine bell complete with mounting brackets, clappers, striking lanyards, and other miscellaneous hardware shall be installed.
NLTP -1235	The bell shall be cast and engraved or etched with the name of the ship and the year of completion.
NLTP -284	<i>5.3.2.3 443.3 Loudhailers</i>
NLTP -1236	A Siren/Loudhailer system shall consist of microphone and amplifier control, operable from the conning position, with weatherproof horn type loudspeakers located forward and aft of the vessel on the deckhouse.
NLTP -35	5.4 450 - SURVEILLANCE SYSTEMS (SURFACE)
NLTP -117	5.4.1 451 Surface Surveillance (Navigation) Radar
NLTP -1237	Two commercial marine navigational radars shall be installed with collision avoidance display, Automatic Radar Plotting Aids (ARPA) and alarm system. The radars shall be as follows: - (1) radar 3cm X band operating at 9GHz; and - (1) 10cm S band operating at 3GHz.
NLTP -1238	The radar system shall provide radar video and ARPA information to the ship's ECDIS. Radar displays shall be installed at the BCC.
NLTP -36	5.5 490 - SPECIAL PURPOSE SYSTEMS
NLTP -118	5.5.1 491 Electronic Test, Checkout and Monitoring Equipment
NLTP -1239	The tugs shall be capable of embarking the Nuclear Monitoring System ADM-300 and associated gear for nuclear emergency response. Note: Locker storage near the bridge for two strong boxes 1m x 1m x 2m. - A requirement of the Nuclear Emergency Response Team (NERT).
NLTP -1240	The vessel shall be equipped with Nuclear Emergency Response Team (NERT) locker storage near the bridge, consisting of two 1m x 1m x 2m strong boxes.
NLTP -119	5.5.2 494 Meteorological System
NLTP -1241	The vessel shall be fitted with a Meteorological system.

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NLTP -2040	<p>The Meteorological system shall be fitted with the following:</p> <ul style="list-style-type: none"> - A wind speed and direction indicator with direct indicating instrumentation mounted in the Bridge, - Exterior air temperature unit operating in the range of -55°C to $+50^{\circ}\text{C}$ with an accuracy of $+1^{\circ}\text{C}$, - Two(2) non-recording aneroid type Barometers, one in the Wheelhouse and one in the Master's cabins. - A psychrometer and suitable apparatus for measuring sea temperature. - No Devices containing liquid Mercury (e.g. Mercury Barometers).
NLTP -1242	<p>The ship's anemometer shall provide the wind speed and direction data to the ship's ECDIS display.</p>
NLTP -6	<p>6 GROUP 5 - AUXILIARY SYSTEMS</p>
NLTP -37	<p>6.1 510 - CLIMATE CONTROL</p>
NLTP -120	<p>6.1.1 511 Compartment Heating System</p>
NLTP -1243	<p>The heating system design shall ensure that when the vessel is connected to shore power in the cold ship condition, enclosed compartments containing mission critical equipment, or containing systems, equipment or stores that would be damaged by freezing, shall be maintained above 4°C.</p>
NLTP -121	<p>6.1.2 512 Ventilation Systems</p>
NLTP -1244	<p>Spaces not air-conditioned shall be heated and ventilated.</p>
NLTP -1245	<p>Ducting shall be of galvanized steel.</p>
NLTP -1246	<p>Galvanizing that is damaged during duct fabrication processes shall be repaired by painting with galvanizing paint on internal and external duct surfaces.</p>
NLTP -1247	<p>Weather exposed ducts shall be not less than 4 mm thick;</p>
NLTP -1248	<p>Ducts within the ship, of single walled construction, shall be not less than the following table:</p>

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ID	Diameter or Longer Side [mm]		Minimum Wall Thickness[mm] (note 1)	
	Fabricated Duct		Non-Watertight Duct	Watertight Duct
	0-150		0.6	1.9
	151-300		0.6	2.5
	305-450		0.9	2.9
	455-750		1.2	2.9
	above 750		1.5	N/A
	Spiral Wound Duct			
	0-200		0.45	N/A
	205-750		0.75	N/A
	Note 1: Thicknesses are minimum for galvanized sheet steel. Greater thicknesses may be required to meet specific requirements of noise, internal pressure, ship motion, infrequent support, exposed locations (accidental impact).			
NLTP-1249	All joints shall be made airtight and sealed by an appropriate sealing compound.			
NLTP-1250	Duct supports for horizontal runs shall be spaced no less than 2.5 m apart, and made of mild steel flat bar attached to the ship's structure.			
NLTP-1251	Ducts that are to be opened and/or taken down periodically for cleaning shall have easily accessible flanged take down joints.			
NLTP-1252	Suitable insulation and vapour barrier shall be applied to the ducting and equipment, where necessary to ensure minimum acceptable heat loss/gain and to prevent condensation.			
NLTP-1253	Drainage arrangements shall be fitted at low points where water is liable to collect.			
NLTP-1254	Metal sheathing shall be provided in areas where insulation may be subject to damage.			
NLTP-1255	The fresh air shall be equally distributed (+/- 20%), on a per occupant basis, to all manned spaces.			
NLTP-1256	Air discharges shall be placed such that they do not blow directly on personnel.			
NLTP-1257	Separate dedicated exhaust air systems, terminating outside, shall be fitted to the galley and washrooms.			
NLTP-1258	Means shall be provided to remove and replace filters and screens efficiently without extensive disassembly.			
NLTP-1259	Facilities shall be provided to allow testing and balancing of the air distribution systems.			
NLTP-2041	Such facilities shall be clear of take-offs, bends and transitions.			
NLTP-1260	Exhaust trunks that routinely becomes oil/grease fouled internally (galley) shall be easily accessible and designed for opening in-situ and/or takedown to facilitate efficient cleaning.			

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NLTP -1261	Fresh air intakes shall be located such that exhaust gas from the funnel, exhausted ventilation air, gas from oil tank vent or crankcase vents, will not be drawn into any spaces.
NLTP -1262	Mechanical ventilation shall be provided to all non-air conditioned spaces, to maintain the required air changes not less than the requirements in the CSA Towboat Accommodation Regulations.
NLTP -1263	The Galley shall have a slight negative pressure to confine heat and odours generated therein.
NLTP -1264	The Galley exhaust system shall be ducted directly to the weather deck.
NLTP -1265	Accommodation duct sizing-pressure losses shall not exceed: 2.5 Pa/Meter
NLTP -1266	Machinery spaces duct sizing-pressure losses shall not exceed: 6.5 Pa/Meter
NLTP -122	6.1.3 513 Machinery Space Ventilation
NLTP -1267	The mechanical ventilation system, provided for the machinery spaces, shall consist of: - Supply duct fans with suitable Weather Deck inlets and outlets. - All necessary ductwork to supply the ventilation needs of the machinery space
NLTP -1268	Mechanical ventilation systems and space heaters shall be designed and fitted in accordance with TCMS and/or Class requirements as well as ISO 8861 and 8862 as applicable.
NLTP -2043	The mechanical ventilation systems, including space heaters shall provide sufficient air to the machinery spaces and funnel casing(s) to maintain the following temperatures within the applicable space: - Not to exceed 45°C in summer with all the machinery operated at full power. - A minimum of 4°C in winter in the cold ship condition when the vessel is connected to shore power with engine heaters on.
NLTP -1269	Fresh air supply for the machinery space shall be taken from separate intakes designed for minimum entrance loss.
NLTP -2044	Fresh air supply for the machinery space shall be located so as to promote maximum cooling.
NLTP -2045	Fresh air supply for the machinery space shall be located to avoid short-circuiting of exhaust air or stack gas.
NLTP -1270	Demisters shall be installed at all fresh air intake points.
NLTP -1271	The exhaust fans, if fitted, shall draw air from the top of the machinery space and discharge it direct to the atmosphere through louvered openings directed aft and protected from the weather.
NLTP -1272	Automatic, non-return dampers shall be mounted in the discharge ducting of each exhaust fan operating in parallel.
NLTP -1273	Machinery spaces and spaces containing hazardous materials shall be capable of being ventilated to the weather deck at a rate not less than 10 air changes per hour.

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NLTP -1274	In cold ship condition, all spaces with operating machinery and spaces storing industrial fluids and chemicals shall be fan ventilated to the weather deck at a minimum of 2 air changes per hour.
NLTP -2046	Heating design shall accommodate this airflow in winter design conditions.
NLTP -123	6.1.4 514 Air Conditioning System
NLTP -1275	The central Air Handling plant shall be configured (physical arrangement, controls) to enable operation in a dehumidifying mode (i.e., cooling followed by reheat of the air flow, or other suitable dehumidification arrangement), under all external ambient conditions above minus 5 °C.
NLTP -124	6.1.5 518 Chilled Water System
NLTP -1276	If a chilled water system is fitted, all material in contact with chilled water shall be copper, copper alloy or stainless steel.
NLTP -1278	All chilled water system shall be designed with permanent facilities to perform the following: <ul style="list-style-type: none"> - Sample the fluid - Add treatment additives to the fluid - Drain all fluid - Remove air from piping system high points - Fill system from jetty - Enable bypass flow around restrictive devices during flushing procedures - Connect the Chilled Water system to temporary equipment for flushing at 2 1/2 times design flow.
NLTP -1279	Condensate from HVAC equipment shall drain directly over-board.
NLTP -38	6.2 520 - SEA WATER SYSTEMS
NLTP -125	6.2.1 521 Firemain and Flushing (Sea Water) System
NLTP -1280	The fire fighting system shall be fitted to deliver hydrants with sea water.
NLTP -2048	The fire fighting system shall consist of self-priming power driven fire pumps, strainers, appropriate piping, fittings, hydrants, and hoses.
NLTP -2047	The firefighting system shall comply with TCMS and/or Class requirements as applicable.
NLTP -1281	An international shore connection for the firemain, accessible from both sides of the vessel shall be fitted.
NLTP -1282	Firemain system shall be provided with at least one pump located outside the Machinery spaces.
NLTP -1283	Two identical pumps, one electrical and one diesel driven shall supply the firemain system.

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NLTP -2049	The electrical pump shall be designated as the main fire pump, and the diesel-driven pump as the emergency fire pump.
NLTP -1284	The system shall protect machinery spaces, accommodations, working spaces and weather decks.
NLTP -1285	Local and remote Bridge control for the fire pumps shall be fitted.
NLTP -1286	The firemain system shall be sized for two fire hoses operating simultaneously from any one firestation with a pressure at the hydrant of 125psi.
NLTP -1287	The firemain shall be kept in the normally dry condition.
NLTP -1288	Cooling of auxiliary systems using firemain water is not permitted under any circumstances.
NLTP -126	6.2.2 526 Scuppers and Deck Drains
NLTP -1289	All piping drain systems shall be installed complete with the necessary valves, fittings, and appropriate hardware for proper operation, including a sufficient number of flanges or unions to facilitate removal.
NLTP -1290	Scuppers and internal deck drains shall not be interconnected.
NLTP -1291	If during construction it is found that water tends to collect in any parts of the decks, the Contractor shall be required to provide additional efficient drainage arrangement above the arrangements included in the approved drawings.
NLTP -1292	All scupper valves shall be arranged to open and close in a fore and aft direction at the ship's side and shall be located for easy access for the maintenance.
NLTP -1293	Gate valves shall be located outboard of each scupper.
NLTP -1294	Neoprene water spouts (common known as "Pigs ears") of appropriate shape shall be fitted to the overboard discharge ends of scuppers and drain pipes.
NLTP -1295	All drain pipes shall be led as directly as possible.
NLTP -2050	The drain pipes shall be pitched to not less than 20 mm per metre when draining aft, 33 mm per metre when draining forward and 42 mm per metre when draining athwartship.
NLTP -1296	The drain pipes shall be provided with a sufficient number of accessible cleanout connections not less than 40 mm diameter for clearing the drainpipes by use of plumber's snake, or with steam or water hose.
NLTP -1297	Deck and fixture drain lines shall be arranged to provide positive drainage when the ship is experiencing $\pm 5^\circ$ of design list, and $\pm 5^\circ$ of design trim at sea or in port.
NLTP -1298	The weather deck and weather areas of the deckhouse and Bridge top shall be self-draining.
NLTP -1299	Runoff from the decks above the main deck shall flow through leaders to the weather deck below.
NLTP -1300	The drainage system shall be sufficient to drain all decks, without progressive accumulation of water.

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NLTP -1301	Scuppers and drains shall be led directly overboard.
NLTP -1302	Space drains below the Main Deck shall be grouped and lead to common overboard discharges.
NLTP -2051	When it is not practical to drain overboard by gravity, space shall be provided with drain wells as required, or discharge to drain wells below.
NLTP -1303	Drain wells shall be drained by the bilge system.
NLTP -1304	Deck drains shall be provided for efficiently draining all interior compartments particularly galley, store rooms and washrooms.
NLTP -1305	The chain locker shall drain into a sump tank, connected to the ships bilge system, constructed below the chain locker.
NLTP -1306	Strainers shall be provided for all deck drainage.
NLTP -1307	Equaliser pipes shall be provided to eliminate unsymmetrical flooding as necessary to meet requirements for stability control.
NLTP -127	6.2.3 528 Plumbing Drainage
NLTP -1308	The galley sinks shall drain to a grease trap.
NLTP -2052	The galley sink grease traps shall be readily accessible for cleaning.
NLTP -2053	The galley sink grease traps shall be provided with a vent to the weather.
NLTP -1309	Drains from lavatories, showers, and sinks shall have traps and accessible cleanout connections.
NLTP -1310	Grey water which originates from interior deck drains, galley sinks, lavatory sinks, showers, laundry and HVAC heating/cooling units shall be directed into a suitably sized grey water collection tank.
NLTP -1311	The grey water tank shall have a vent to the weather deck.
NLTP -2054	The grey water tanks shall be fitted with a clean out port accessible from within the compartment.
NLTP -1312	A pump, piping and controls shall be provided to allow discharge of the grey water tank over the side.
NLTP -1313	The grey water tank shall be designed such that when it reaches 80% full capacity, the contents shall be discharged automatically.
NLTP -2055	The automatic discharge feature shall be fitted with a manual override to prevent discharge in ports/locations where greywater discharge is restricted.
NLTP -1314	An alarm shall be energized in the Bridge Control Console when the grey water tank reaches 90% full capacity.
NLTP -1315	Manual ball valves shall be provided to select the discharge path.

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NLTP -1316	Check valves shall prevent back flow from sea and connected system.
NLTP -128	6.2.4 529 Ballasting System
NLTP -285	<i>6.2.4.1 529.1 Bilge and Ballast System</i>
NLTP -1317	A means of pumping bilge contents to an upper deck discharge connection shall be fitted.
NLTP -2178	The bilge/ballast pump shall also be connected to the ballast tank(s) through suitable piping and valves to enable adjustments in the vessels stability.
NLTP -2056	The bilge/ballast system shall comply with CSA (SOR/90-264, Schedule XV).
NLTP -1318	The emergency fire pump shall be configured for emergency bilge and ballast pumping.
NLTP -1319	Ball valves with locking pins shall be fitted to prevent inadvertent connection of the bilge main to the fire main suctions.
NLTP -1321	The bilge/ballast pump shall be piped to selectively draw water from the sea, water ballast tanks, forepeak, chain locker and/or engine room emergency suction.
NLTP -1322	The bilge/ballast pump shall be cross connected to the bilge pump suction manifold and provided with connection on deck for salvage operation.
NLTP -1323	The bilge/ballast pump shall selectively be capable of discharge to the fire main, water ballast tanks, and overboard.
NLTP -1324	The forepeak valve shall be connected to an accessible location via an extended spindle.
NLTP -1325	The vessel shall be designed to operate in all loading conditions without using water ballast.
NLTP -1326	Each main watertight subdivision shall have at least one bilge suction.
NLTP -2057	A minimum of two suctions shall be fitted in the machinery spaces.
NLTP -2058	Machinery space bilge water must drain into oily-bilge collection tank.
NLTP -1327	The bilge discharge system shall be arranged to bypass the oily-bilge collection system to permit direct overboard discharge in the event of an emergency.
NLTP -1328	All overboard discharge valves shall be non-return.
NLTP -2177	A means of pumping bilge contents to an upper deck discharge connection shall be fitted. The bilge/ballast pump shall also be connected to the ballast tank(s) through suitable piping and valves to enable adjustments in the vessels stability.
NLTP -2176	A means of pumping bilge contents to an upper deck discharge connection shall be fitted. The bilge/ballast pump shall also be connected to the ballast tank(s) through suitable piping and valves to enable adjustments in the vessels stability.
NLTP -39	6.3 530 - FRESH WATER SYSTEMS

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NLTP -129	6.3.1 533 Potable Water
NLTP -1329	The potable service system shall include potable water tanks (storage and pressure) with sight glass level indicators, an electric hot water heater and water pumps.
NLTP -1330	The potable water system shall be designed and fitted in accordance with TCMS and/or Class requirements.
NLTP -2059	The potable water system shall comply with ISO 5620-1 and 5620-2.
NLTP -1331	Two potable water filling shore connections located on main deck port and starboard shall be fitted.
NLTP -1332	The caps on the fill connections shall be padlocked.
NLTP -2060	Label plates reading “POTABLE WATER ONLY” in both official languages shall be installed at the fill valves and connections.
NLTP -1333	Each of the filling connections shall be capable of filling all potable water tanks.
NLTP -1334	Every outlet used for drinking and culinary purposes shall be provided with filter capable of removing suspended particles down to 1 micron.
NLTP -1335	Cross connection between the potable water system and any other system (including jacket water) that could contaminate the potable water is not permitted.
NLTP -1336	All components, pipes, tank coats, and other material that comes in direct contact with potable water, including any supplied hull filling hoses and fittings shall be NSF/ANSI 61 Drinking Water System Components – Health Effects compliant.
NLTP -1337	Each potable water tank shall be fitted with a clean out plate, fill connections, vents, drains, and connections to the external pump.
NLTP -1338	Tank stiffeners shall be located outside the potable water tanks.
NLTP -1339	An electrically driven pump, complete with on/off pressure switches, shall draw domestic water from the fresh water storage tanks and discharge it to the cold fresh water distribution system and to a calorifier/hot fresh water distribution system.
NLTP -1340	The systems shall be arranged to minimize airlocks.
NLTP -2062	The systems shall be arranged to minimize short cycling of the pump.
NLTP -1341	Automatic air vents shall be provided as required at each deck level.
NLTP -1342	Drain plugs shall be provided at low points in the system for drainage purposes.
NLTP -1343	Hot fresh water shall be supplied to all domestic fixtures, systems or units of equipment requiring usage at a temperature not less than 49°C.
NLTP -1344	The hot water system shall be of the continuous re-circulating type with thermostatically controlled pump.
NLTP -1345	Water heaters shall be equipped with heat sensitive devices to cut-off all power should the internal tank temperature reach 70°C.

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NLTP -1346	Water heaters shall be fitted with a pressure relief valve.
NLTP -1347	All hot water lines and flanges shall be insulated to minimize heat losses and ensure personnel safety.
NLTP -2063	Cold water lines and flanges shall be insulated to prevent condensation.
NLTP -1348	An electrically driven fresh water pump shall be fitted capable of transferring potable water from the potable water tanks to other vessels.
NLTP -1349	The pump shall be provided with a suction strainer, and shall deliver to a deck connection fitted with a stop valve and a 1-1/2" threaded fire type nipple, screw and cap with chain.
NLTP -1350	The pump shall be capable of delivering 10 cubic meters per hour with a flooded suction and total head of not less than 45m.
NLTP -1351	An automatic system shall be provided to sample the potable water in the tank and if required, the system shall have accommodations to allow the ships staff to add chlorine or bromine to ensure that the quality meets the requirements stipulated in Guidelines for Canadian Drinking Water Quality Summary Table – October 2014.
NLTP -1352	Provision to monitor the trace levels of chlorine and bromine in the potable water system shall be provided.
NLTP -1353	A Drinking water fountain conforming to Marine Occupational Safety and Health Regulations shall be provided in way of the Mess area.
NLTP -40	6.4 540 - FUELS AND LUBRICANTS HANDLING AND STOWAGE
NLTP -130	6.4.1 541 Ship Fuel and Fuel Compensating System
NLTP -1354	The vessel shall be fitted with a fuel oil system covering storage, transferring, treating/cleaning, supply/use and discharge of the appropriate fuel in accordance with engine manufacturers recommendations and in compliance with CSA (SOR/90-264, Schedules IX and XII).
NLTP -1355	A complete fuel oil conditioning system, including fuel/water coalescers and filters shall be provided.
NLTP -1356	All strainers and filters for fuel oil service shall be of all steel construction.
NLTP -286	6.4.1.1 541.1 Fuel Filling and Storage
NLTP -1357	Fuel shall be embarked through a simplex coarse strainer at a single filling station, complete with saveall.
NLTP -2065	The fuel filling station shall be located on the main deck readily accessible from both sides of the vessel.
NLTP -1358	The saveall at the fuel filling station may be joined/shared with the saveall required for the lube oil filling station if the two are co-located.
NLTP -1359	The deck connection at the fuel filling station shall be externally threaded and fitted with cap including a seal.

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NLTP -1360	The cap at the fuel filling station shall be made of a corrosion-resistant, non-sparking metal (i.e. brass).
NLTP -1361	A fuel flow meter/counter shall be provided on the fuel oil filling line to indicate fuelling rate and quantity.
NLTP -1362	Each fuel storage tank and service/settling tank shall be fitted with a filling pipe, sounding pipe, and two air vents with flame traps and means of water stripping.
NLTP -1363	Fuel tank overflow arrangements shall be fitted in accordance with TCMS requirements applicable to the vessels intended operation.
NLTP -1364	All non-structural fuel tanks shall be fitted with quick operating drain valves and shall drain to a suitable storage/collection tank.
NLTP -287	<i>6.4.1.2 541.2 Fuel Transfer Settling and Service</i>
NLTP -1365	There shall be two fuel service/settling tanks arranged such that either tank could be in use while the other tank is having its contents cleaned by recirculation.
NLTP -1367	Service/settling fuel tanks shall be as large as can reasonably be accommodated to give the maximum settling time.
NLTP -1368	The monitoring of all fuel oil tanks and the remote control of the fuel oil transfer pump and service pump during transferring and discharging of fuel oils shall occur from Machinery Control Console.
NLTP -1369	An electric motor driven transfer pump shall be provided to transfer fuel from any of the fuel oil storage tanks via a duplex filter/water separator to any of the settling/service tanks or to a deck connection to defuel.
NLTP -1370	A manually operated fuel oil transfer pump shall be provided and fitted in parallel with the motor driven transfer pump.
NLTP -288	<i>6.4.1.3 541.3 Fuel Service System</i>
NLTP -1371	An electric motor driven service pump shall be installed to transfer fuel through a second duplex filter/water separator from any of the settling/service tanks to the header tanks for the main propulsion equipment and to larger day tanks for the auxiliaries.
NLTP -1372	The fuel header and day tanks shall be fitted with level controls that enable automatic service pump operation to maintain fuel tank levels within prescribed maximums/minimums.
NLTP -2066	The day tanks shall also be fitted with readily accessible, visual fuel level gauges.
NLTP -1373	The fuel pressure to the main engines shall be regulated through the header tank.
NLTP -1374	The fuel service system arrangement shall be approved by the engine manufacturer.
NLTP -2067	The prescribed fuel service system shall only be changed on the recommendation of the engine manufacturer.
NLTP -1375	Where required, fuel oil return lines from the main engines shall be led separately to the online service fuel tank, with the fuel return line terminating within the tank as

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	great a distance as possible from the engine intake suction and as close to the bottom as practical to permit maximum fuel cooling.
NLTP -1376	Fuel returned from auxiliary engines should be directed back to their respective day tanks with particular attention to fuel cooling.
NLTP -1377	Filter, strainer and coalescer specifications shall be consistent with engine requirements as specified by the OEM.
NLTP -1378	Fuel distribution lines shall be provided with appropriate isolating valves from the respective tanks to the respective engine.
NLTP -1379	Fuel distribution lines isolation valves shall be normally closed valves, and open automatically as the initial action in the engine start sequence.
NLTP -1380	The tanks supplying fuel to the emergency diesel fire pump shall be of sufficient size to supply fuel for at least 18 hours at full load without replenishment.
NLTP -1381	The tanks supplying fuel to the emergency diesel electric generator shall be of sufficient size to supply fuel for at least 36 hours at full load without replenishment. Don't think this tug will have an emergency generator but will provide electrical power to essential services by UPS or batteries. Needs clarification.
NLTP -41	6.5 550 - AIR, GAS AND MISC. FLUID SYSTEMS
NLTP -131	6.5.1 551 Compressed Air System
NLTP -1382	A compressed air system shall be provided for ship service air and for engine starting, if selected engine start system is compressed air.
NLTP -1383	The compressed air system shall comply with TCMS and/or Class requirements as applicable.
NLTP -2068	Air delivery shall comply with ISO 8573.1 (2001) quality class 3 as a minimum air quality standard and CSA (SOR/90-264, Schedule XI)
NLTP -1384	There shall be a minimum of two compressors and two receivers each for ship service air and engine starting if the selected start system.
NLTP -1385	If pneumatic controls are used, there shall be a dedicated control air system with its own compressor and receivers and have a cross connection with the ship service air system.
NLTP -1386	If fitted the control air compressor(s) should be of the oil free liquid ring type.
NLTP -2150	Air compressors shall have drip pans and drip tray lines installed to contain any possible leakage from the seals.
NLTP -1387	The control air system, if fitted, shall provide clean dry air at a stable pressure to meet the requirements set by the manufacturer of the selected control system and mechanisms.
NLTP -1388	The control air system, if fitted, shall comply with TCMS and/or Class requirements as applicable. Air delivery shall comply with ISO 8573.1 (2001) quality class 2 as a minimum air quality standard and CSA (SOR/90-264, Schedule XI)”
NLTP -1389	The control air system, if fitted, shall, as a minimum, include the following features: - Pressure reducing station with pressure gauge,

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	<ul style="list-style-type: none"> - An efficient Micronics filter, and a dehydrator capable of reducing dew point to minus 25°C, - Buffer tank of a minimum of 0.1 cu. metre capacity, complete with safety devices, drain valves and pipe, and pressure gauge, and - Low-pressure alarm complete with pressure switch, audible alarm and indicator lamp, remote pressure gauge with cock shall be located in wheelhouse.
NLTP -1390	Compressors shall be fitted of a capacity sufficient to maintain 1.25 times the maximum system demand and to charge the air receivers from zero to working pressure within 15 minutes.
NLTP -1391	The compressors shall be equipped for automatic operation plus remote stop/start from the Machinery Control Console.
NLTP -1392	Drains from the compressors shall be led to an outlet near floor plate level.
NLTP -1393	The compressed air system shall include all the instrumentation and alarms required for safe operation.
NLTP -2069	<p>The following instrumentation and alarms as a minimum compressed air system shall include:</p> <ul style="list-style-type: none"> - Compressor low oil level shutdown switch and alarm indicator; - High temperature shutdown switch and alarm indicator; - Low pressure alarm; - Direct isolatable mounted pressure gauges for each receiver, main air supply header, each branch supply, before and after reducing station; and - Temperature gauges installed on air delivery line from each compressor air cooler.
NLTP -1394	Lines, reducing valves, etc., shall be sized to accommodate pressure drops for periods of high demand.
NLTP -1395	The ship service air system shall be supplied from the ship service air receiver and shall distribute air to the equipment and locations as required.
NLTP -1396	<p>Air outlets complete with shutoff ball valves, spring loaded, quick-connect valves complete with male at pipe and female at hose end, hose of 10 metre length minimum and spring loaded hand nozzles shall be provided at the following:</p> <ul style="list-style-type: none"> - 3 locations distributed in each machinery space; - 1 location forward on deckhouse at main deck level; - 1 location aft on deckhouse at main deck level; and - 1 location in the Propeller compartment.
NLTP -1397	A minimum of three air connections shall be fitted in the machinery space;
NLTP -2070	A minimum of three exterior air connections, one aft deck, one forward deck and one on the superstructure deck.
NLTP -1398	Notwithstanding the above sufficient air connections to reach all points in the vessel's, exterior decks, and the mast using a 15 metre air hose shall be provided.
NLTP -1399	Local connections are also required to blow down sea chests.
NLTP -1400	Where the requirements of class differ from those outlined above regarding service air and or control air systems, the higher of the two standards shall be implemented.

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NLTP -132	6.5.2 555 Fire Extinguishing Systems
NLTP -289	<i>6.5.2.1 555.1 Fixed Fire Extinguishing Systems</i>
NLTP -1401	Fire stations shall be provided such that any part of the vessel can be reached from at least two fire stations via a single length of hose. A single length hose shall be defined as a hose up to 15.24 metres length.
NLTP -1402	Each firestation shall terminate with a stop valve with a NPSH male thread to accept 1-1/2 inch wye.
NLTP -2071	Each firestation shall be designed to accommodate the following equipment supplied as GSM: <ul style="list-style-type: none"> - One (1) - 1-1/2" wye (NSN 4210-21-583-1015), - Two (2) - 1-1/2" hose with a length of 15.24m (NSN 4210-21-904-1361), - One (1) - 60 GPM inline foam eductor (NSN 4210-21-891-1203), - Two (2) - 60 GPM nozzle (NSN 4210-01-497-1361), - Two (2) - Spanner Wrench (NSN 5120-21-583-0740), - Three (3) - 20 litre AFFF Can (NSN 4210-21-900-4823), and - One (1) - AFFF canister rack to hold three 20L AFFF canisters (Similar to Drawing Number 0350032).
NLTP -1403	The machinery spaces shall be installed with automatic fixed fire-extinguishing systems appropriate for unattended machinery space operation.
NLTP -1404	The fixed fire extinguishing system shall be capable of being activated from outside the machinery space.
NLTP -1405	The preferred media for the fixed fire extinguishing system in the machinery space is water mist. This does not preclude CO ₂ , chemical or dual extinguishing systems. Halon shall not be used.
NLTP -1406	No Ozone Depleting Substance shall be used in any fire extinguishing system.
NLTP -1407	A carbon dioxide smothering system or other oxygen displacing systems, if fitted, for the machinery spaces shall be arranged for total flooding of the space above and below floor plates. Visual and audible warnings displayed locally and on the Bridge, and the required release time delay shall be provided with any carbon dioxide smothering system.
NLTP -1408	Appropriate warning signs shall be provided to ensure that all closures and ventilating systems are secured and personnel evacuated from stricken areas before carbon dioxide or other oxygen displacing substance is released.
NLTP -1409	A full discharge trial of the carbon dioxide or other smothering system shall be conducted on the first of class to measure CO ₂ concentration levels.
NLTP -1410	Firefighting and control markings shall be in accordance with IMO Standards. Photo-luminescent pictograms shall be supplied.
NLTP -290	<i>6.5.2.2 555.2 Portable Fire Fighting Equipment</i>
NLTP -1411	The following portable fire fighting appliances shall be provided as GSM. The Contractor shall identify and supply any additional equipment required to meet

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	Regulatory Body standards and shall provide sufficient storage space and racks as required.
NLTP -1412	Stowage shall be provided for four sets of the following items provided as GSM: - Size Large Bunker Suits (NSN 8415-21-910-8049 and NSN 8415-21-910-8064); - Fire Fighter (FF) Hoods (NSN 8415-01-268-3473); - Size Large Large FF Gloves (NSN 8415-21-904-6765 and NSN 8415-21-907-9913); - Large FF Boots (NSN 8430-21-880-9920); and - Large FF Helmets (one (1) NSN 8415-21-862-7817 and three (3) NSN 8415-21-862-7825);
NLTP -1413	Stowage shall also be provided for the following individual pieces of GSM equipment: - Force Rescue Unit (NSN 4240-12-157-8070); - Fire Axe (NSN 4210-21-583-0757); - Thermal Imaging Camera and mounting bracket (NSN 5855-01-492-6913 and NSN 5855-01-499-3870); - Band-it Clamp Kit (NSN 5120-21-639-9913); - Smoke Clearing Fan (NSN 4140-01-333-2224); and - Water-gel Blanket (NSN 4210-01-365-7631).
NLTP -1414	All Contractor supplied portable extinguishers shall be CSA marine-labelled, certified types with mounting brackets. The quantity, size, type and location of all extinguishers shall meet the requirements of the Regulatory Body.
NLTP -133	6.5.3 556 Hydraulic Fluid System
NLTP -1415	The hydraulic system shall comply with TCMS and or Class requirements.
NLTP -2072	The system shall be designed in accordance with a suitable design standard such as SAE J1770_201305 and be compliant with CSA SOR/90-264 Schedule XIV.
NLTP -1417	The hydraulic system shall contain two identical variable displacement pumps with automatic demand regulated (pressure compensated) control.
NLTP -2073	The two variable displacement pumps shall be driven one off each main engine to supply an open loop system.
NLTP -1418	The variable displacement pumps shall automatically regulate flow to meet the demands of the hydraulic equipment installed onboard.
NLTP -1419	Pump discharges shall be common to permit use of either or both pumps as required.
NLTP -1420	Pump drives shall be through a gear increaser and mechanical hand operated clutch.
NLTP -1421	The gear increaser shall be fully enclosed, self-lubricated and cooled, either by air, or sea water taken from the main engine sea water cooling system.
NLTP -1422	The system arrangement shall permit operation of any combination of hydraulic equipment installed onboard.
NLTP -1423	The capacity and rating of the pumps shall be adequate to meet the full duty load of all combinations of installed hydraulic equipment.

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NLTP -1424	Speed control of hydraulically operated equipment shall be by flow control regulation.
NLTP -2074	Control valves for speed and direction of hydraulic equipment shall be fitted in logical positions relative to the equipment being controlled and be well suited to the environmental conditions expected in the location of the control.
NLTP -1425	Adequate filtration protection consistent with the design of components shall be provided in the systems.
NLTP -2075	Where circuit flow capacity is excessive for full flow filtration (of the order of 10 microns nominal), proportional flow filters will be acceptable.
NLTP -1426	Adequate provision shall be made in all components and circuits for bleeding and venting of entrapped air.
NLTP -1427	Where practicable, bleed, vent and drain points shall be returned to the fluid reservoir.
NLTP -1428	The system shall be designed to facilitate complete system flushing.
NLTP -1429	The hydraulic fluid reservoir shall be of adequate capacity to limit fluid temperature to 70 degrees Celsius under peak load conditions for 60 minutes continuous operation, at an ambient temperature of 40 degrees Celsius.
NLTP -1430	The reservoir shall be a fabricated structure of stainless steel designed to minimize contamination of the system by corrosion products.
NLTP -2076	The reservoir shall be furnished completely with fluid level indicators, low level alarm, high oil temperature alarm, clean out doors, pump suction filters or strainers, filter protected filling arrangement, conveniently located drain facilities, and an air breather arrangement.
NLTP -1431	Internal surfaces of the reservoir shall not be coated with any corrosion preventive compound.
NLTP -1432	Internal baffles shall be fitted in the reservoir to minimize the effect of ship's motion in a seaway.
NLTP -1433	The reservoir shall not form part of the ships structure.
NLTP -1434	All components of the hydraulic system and inter-connecting ports shall be legibly and permanently identified in both official languages for ease of installation and maintenance.
NLTP -1435	Adequate protection shall be fitted in each leg of the systems to prevent damage to the systems or components thereof in the event of an overload condition.
NLTP -1436	Provision shall be made to isolate each leg of the hydraulic system to prevent creep or feedback, and to facilitate repair or maintenance of a sub-system without need for restricting the use of the remaining sub-systems.
NLTP -1437	Pressure regulating devices shall be adjustable within a range compatible with the system design and design of components within the system.
NLTP -1440	The hydraulic system filtration shall ensure that contaminant in the system are maintained less than the requirements of the OEM(s).
NLTP -1441	The fluid velocities shall be limited as follows: (a) Pump suction lines having no positive head, 1.2 m/s;

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	(b) High pressure piping, maximum 6 m/s.
NLTP -1442	Hydraulic System and Components shall be designed for operation on fluid conforming to CGSB 3-GP-36M Petroleum Hydraulic Fluid, Inhibited.
NLTP -1443	Gauges shall be supplied and fitted to indicate system pressure at the outlet of each pump and each control station.
NLTP -1444	Stainless Steel fittings and piping shall be used throughout the entire hydraulic system.
NLTP -42	6.6 570 - REPLENISHMENT SYSTEMS
NLTP -134	6.6.1 572 Ship Stores and Equipment Handling Systems
NLTP -291	<i>6.6.1.1 572.1 Deck Crane</i>
NLTP -1445	The crane shall be electro-hydraulically operated, be able to reach the main working deck, and have sufficient reach to: <ul style="list-style-type: none"> - deploy fuel spill response equipment over the gunwales, - enable the tug to pick up and release temporary naval buoy moorings of up to 1 tonne, and - be capable of loading and off-loading light cargo when the tug is alongside dock, and - launch and recover the tug's Rescue Boat.
NLTP -1446	The crane controls shall be fitted in a position such that the operator can clearly view the rescue boat at all times during the launch and recovery.
NLTP -2077	The crane shall have an emergency manual mode to support rescue boat launching and recovery of the rescue boat in event of a power failure.
NLTP -1447	The davit/crane shall be to "Offshore Crane Specification API 2C" for handling manned boats for Sea State 3 operation.
NLTP -2078	The davit/crane shall have a minimum rated safe working load (SWL) for manned lifts of at least 1000 kg.
NLTP -2079	A minimum of two removable lifelines shall be attached to the head of the boom.
NLTP -2080	Lifelines shall have a minimum factor of safety (FOS) of 10.
NLTP -1448	The davit/crane Structure Design Factor shall have a minimum factor of safety (FOS) 4.5.
NLTP -2081	The quick release device shall have a minimum FOS 12.
NLTP -2082	The Falls length shall take into consideration ship's lightest draft and 10 degree trim and list of 20 degree.
NLTP -2184	In its Rescue Boat launch and recovery configuration, and with the boat in its fully loaded condition, the lowering speed (S) of the crane shall be $0.4+(0.02 H)>S<1.30$ m/s, H is the height from davit head to water line at the lightest sea going condition. The hoisting speed shall have a minimum speed of > 0.3 m/sec at the safe working load.

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NLTP -1449	The wire shall be rotation and corrosion resistant and shall have a minimum FOS 10.
NLTP -1450	The davit/crane shall be equipped with an Anti-Twist Block.
NLTP -43	6.7 580 - MECHANICAL HANDLING SYSTEMS
NLTP -135	6.7.1 581 Anchor Handling and Stowing Systems
NLTP -1451	The vessel shall be provided with two certified stockless anchors and chain cables.
NLTP -2083	The number of anchors and length of chain cable per anchor shall be not less than 192 metres.
NLTP -1452	Anchor arrangements shall provide that the anchor and anchor cable shall not foul or damage the hull, hull appendages, or equipment when weighting, dropping or riding at anchor.
NLTP -1453	Facilities and washdown point shall be fitted for washing anchor and chain with salt water.
NLTP -1454	A suitable windlass operated anchor handling system shall be provided.
NLTP -2084	The anchor and anchor cable size shall be in accordance with the Regulatory Body
NLTP -2085	The windlass may be integrated with forward towing hawser winch.
NLTP -1455	The anchor chain and arrangement shall permit the anchor chain to be broken at each shackle, at 28 metre intervals, and enable the tug to moor to a Canadian Navy buoy.
NLTP -1456	The windlass control system shall be configured for local control.
NLTP -1457	The anchor shall have an emergency manual release and recovery system in event of a windlass failure.
NLTP -1458	Chain stoppers shall be so positioned as to ensure easy working of anchor cables. Suitable arrangement shall be provided to ensure that the anchors consistently trip and seat home firmly.
NLTP -136	6.7.2 582 Mooring and Towing Systems
NLTP -1459	All towing equipment and lines shall be of size and length suitable for the maximum tow defined.
NLTP -292	6.7.2.1 582.1 Mooring
NLTP -1460	Stowage spaces/racks shall be provided to accommodate hawsers, mooring and towing lines, and equipment (such as cable jack, sledge hammer, pry bars, cable bags, portable fenders, rat guards, fire axes) to support anchoring, mooring/berthing.
NLTP -1461	Initial provisioning of berthing hawsers, strops, shackles, fenders, shot mats, and other ancillary deck equipment configured for the tugs and required for operations plus a two year supply of spares shall be supplied.

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NLTP -1462	Mooring fittings such as bollards, chocks and cleats shall be in accordance with industry standards such as ASTM.
NLTP -2086	Mooring fittings such as bollards, chocks and cleats shall be approved by the Regulatory Body.
NLTP -1463	One heaving line shall be provided for each hawser and spring line.
NLTP -1464	Chocks, bitts, cleats, and chain and rope stoppers of the appropriate size shall be installed for optimum line handling arrangement clear of interference any object or sharp edge.
NLTP -2087	Cleats and chocks shall be arranged to support Rescue Boat operation when along side on the port and starboard side.
NLTP -1465	Bollards shall be double and full-height type to enable crew to work lines while standing.
NLTP -1466	Four bollards shall be fitted, two on the forward working deck and two on the aft working deck.
NLTP -1467	A minimum of eight stainless steel fairleads suitable for synthetic line shall be fitted, four on the port and four on the starboard gunwales on the fore deck.
NLTP -293	<i>6.7.2.2 582.2 Towing</i>
NLTP -1468	Towing equipment and arrangement shall be designed, tested and approved in accordance with the Regulatory Body.
NLTP -1470	All deck machinery shall be powered by one type of power source.
NLTP -373	<i>6.7.2.2.1 582.2.1 Hawser/Towing Winches</i>
NLTP -375	<i>6.7.2.2.1.1 582.2.1.1 General</i>
NLTP -1471	All hawser/towing winches shall be self tensioning and capable of holding enough synthetic line and /or wire rope for the size of tug.
NLTP -2089	All hawser/towing winches shall operate at the tugs maximum rated bollard pull.
NLTP -1472	Hawser/Towing winches shall be situated as to maximize towing efficiencies and maintain a clear working deck and incorporate features into the minimum number of units.
NLTP -1473	All winches shall be fitted with spooling gear.
NLTP -1474	The hawser/towing winch shall be fitted with spooling gear, towing pins, roller and cable clamps.
NLTP -1475	All winch cables to be fitted with tow hooks capable of absorbing the maximum bollard pull with a minimum safety factor of six.
NLTP -2090	The tow hook shall have an automatic release and be provided with a built in shock absorber.

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NLTP -1476	All winches shall have a quick release mechanism controllable locally as well as remotely from the Bridge.
NLTP -1477	An encapsulated staple, configured for use with the winches provided shall be fitted on the forward and aft working decks.
NLTP -2091	The encapsulated staples shall be of a highly polished material such as stainless steel to prevent abrasion to synthetic lines.
NLTP -1478	The hawser winch, staple and fairleads shall be situated to allow the hawser to be deployed forward or aft at the centre line and to each side of the vessel.
NLTP -376	6.7.2.2.1.2 582.2.1.2 Foredeck Towing/Hawser Winch
NLTP -1479	The foredeck shall have a Hawser winch with self-tensioning control capable of holding 76 metres of synthetic line rated for the vessel's maximum rated bollard pull with a minimum safety factor of six.
NLTP -1480	The hawser shall have a fitted encapsulated staple of highly polished material (i.e. stainless steel) suitable for use with synthetic lines.
NLTP -1481	The Hawser winch, staple and fairleads shall be situated to allow the hawser to be deployed forward at the centre line and to each side of the vessel.
NLTP -377	6.7.2.2.1.3 582.2.1.3 Aft Deck Towing/Hawser Winch
NLTP -1482	The aft deck shall have a Hawser winch with self-tensioning control capable of holding 183 metres of synthetic line capable of operating at the tugs maximum rated bollard pull with a minimum safety factor of six in the indirect towing mode.
NLTP -1483	The Hawser winch will have a secondary drum capable of holding 76 metres of synthetic line capable of operating at the tugs maximum rated bollard pull.
NLTP -1484	The Hawser winch will have a fitted encapsulated staple of highly polished material (i.e. stainless steel) for each hawser suitable for use with synthetic line.
NLTP -1485	The aft deck shall also be fitted with a towing winch capable of holding 610 metres of wire rope capable of operating in a standard astern towing configuration sized to the tug's maximum bollard pull with a safety factor of 6.
NLTP -1486	The towing winch shall be fitted with automatic spooling gear, towing pins, aft roller and cable clamps.
NLTP -1487	A towing pin shall be fitted at the centerline.
NLTP -1488	Hawsers and winches shall be multi-drum, waterfall or single purpose.
NLTP -374	6.7.2.2.2 582.2.2 Winch Controls
NLTP -1489	All winches shall have both local and remote controls.
NLTP -1490	The primary control shall be from the bridge.
NLTP -2092	Command transfer shall be from the wheelhouse only.

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NLTP -2093	Winch abort/reset buttons and line tension control with display shall be located in wheelhouse only.
NLTP -1491	Local controls shall be watertight.
NLTP -1492	Winch controls shall be situated in a safe location with an unobstructed line of sight to the tow in the primary towing direction when operating the controls.
NLTP -1493	Winch control levers to be clearly labelled with the direction of travel logically oriented.
NLTP -1494	Control stations for winches to feature the following functions; winch speed and direction controls, power brake lever, air clutch push-buttons, abort/reset push-buttons (wheelhouse only).
NLTP -1495	The tow hook release, towing winch brake, and pneumatic winch controls shall be fitted with applicable activation source in accordance with selected type, compressed air or other.
NLTP -137	6.7.3 583 Boats, Boat Handling and Stowage Systems
NLTP -1496	Each tug shall have a Rescue Boat with outboard motor. The Rescue Boat shall: - be SOLAS certified as a lifeboat for the full crew; - be capable of general, light harbour duties, such as transporting personnel.
NLTP -1497	The deck adjacent to the launching/recovering system for the Rescue Boat shall have sufficient area available for embarking and disembarking personnel, transferring stores and conducting boat troubleshooting.
NLTP -1498	Chocks, cradles, gunwale guards and all necessary fittings and support for the stowage of the Rescue Boat shall be provided.
NLTP -1499	A covered stowage rack shall be fitted on the after deck for two 20 litre fuel tanks and possess a quick release mechanism to jettison the fuel containers in an emergency.
NLTP -1500	Weatherproof removable storage cover for the rescue boat shall be provided.
NLTP -1501	Lifting slings and the associate fittings including hoisting shackles, webbing, quick release device (such as Cranston Eagle Hook) to facilitate the safe and quick launch and recovery of the rescue boat shall be provided.
NLTP -1502	Handling lines, cleats and/or stoppers shall be provided as necessary for rescue boat launching, retrieval and handling along side port and starboard.
NLTP -1503	A suitable snatch block shall be secured to the head of the davit/crane and another suitable snatch block shall be secured to an eye on the deck to provide a good lead for a diver recovery line.
NLTP -1504	The crane shall be used to launch and recover the Rescue Boat in compliance with SOLAS.
NLTP -44	6.8 590 - SPECIAL PURPOSE SYSTEMS
NLTP -138	6.8.1 593 Environmental Pollution Control Systems
NLTP -1506	The tug shall comply with all national and international pollution prevention regulations currently in force.

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NLTP -294	<i>6.8.1.1 593.1 Air Pollution Abatement Systems</i>
NLTP -1507	All engines on the vessel, including propulsion, fire pumps, and generators shall be compliant with applicable IMO regulations.
NLTP -1508	The engines shall be compliant with current US Environmental Protection Agency environmental standards for Marine diesel engines. EPA Code of Federal Regulations (CFR40) part 89 and 94: Emission Standards and Certification Requirements for engines—Tier III.
NLTP -295	<i>6.8.1.2 593.2 Oil Pollution Abatement Systems</i>
NLTP -1509	The Oily Bilge Water system shall be installed and shall consist of a saveall at the fuelling station to contain leaks or spills during fuelling, an oily water collection tank, a dirty oil tank, bilge alarm, oil separator with oil content monitor, transfer pump and piping system.
NLTP -1510	An oily bilge water collection system shall be provided for the machinery spaces and the steering gear compartment.
NLTP -1511	The Contractor should select the appropriate pollution prevention equipment from the TCMS Approved Pollution Prevention Equipment Catalogue (see TCMS Approved Products Catalogue Index).
NLTP -1512	Dirty Oil tanks shall be of sufficient size to receive bilge and fuel oil water separator effluent and additionally from main engine, generator and auxiliary equipment oil changes.
NLTP -1513	Oily bilge water tanks shall be of sufficient size to support the continuous underway duration.
NLTP -2094	Collected oily bilge water shall be transferable to the CFB Halifax and Esquimalt oily water processing facilities, or commercial contractors, for treatment.
NLTP -1514	The tanks shall be provided with a high level alarm in addition to the standard sounding tube.
NLTP -1515	Control of the transfer pump operation shall be available at each of the main deck discharge stations.
NLTP -1516	All liquid transfer pumps, fuel purifiers and oily water discharge pumps are to have remote shut down switches fitted at a common station on the main deck.
NLTP -1517	The oily waste discharge and fuelling systems shall have a discharge connection on the main deck enclosed by an area to contain leaks or spills during bunkering operations.
NLTP -1518	All oily bilge water and, oily water collection tank and dirty oil tank content shall be capable of being discharged via the oily water transfer pump and deck fittings at main deck (port and starboard), processed through an oily water separator, or transferred from the oily water collection tank to the dirty oil tank.
NLTP -1519	The oily water transfer pump shall be capable of discharging oily water directly over-the-side in emergency situations.
NLTP -2095	At least one of the isolation valves from the transfer pump to the overboard hull fitting shall be capable of being locked in the closed position.

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NLTP -1520	The oily water transfer pump shall be a self-priming type designed for this service.
NLTP -2096	A manual pump shall be incorporated into the oily water system.
NLTP -1521	Oily water separators and oil content monitoring shall be fitted in accordance with the Regulatory Body.
NLTP -1522	Overboard discharge piping from oil/water separators shall be fitted with at least two shut-off valves as close to the shell as possible.
NLTP -296	<i>6.8.1.3 593.3 Sewage Treatment and Disposal Systems</i>
NLTP -1523	The Sanitary Flushing System shall use fresh water under pressure to flush all water closets.
NLTP -2097	The vessels shall be fitted with vacuum flush type water closets, an accumulator tank, individual black and grey water sewage collection tanks complete with level gauge, vent pipe, discharge system and discharge pumps.
NLTP -2098	The system shall be designed and fitted in accordance with the Regulatory Body.
NLTP -1524	Soil, urinal and vent pipes shall maintain a fall of not less than 1 in 15 relative to the design water plane.
NLTP -1525	The discharge pumps shall be capable of discharging the collected black and grey water, either directly overboard or to a shore facility via a standard IMO deck shore connection with the vessel docked on either side.
NLTP -1526	The total capacity of the black water tanks and the grey water tanks shall be sufficient to accommodate 72 hours of continuous operation without discharge plus 20% assuming the sewage treatment plant is inoperable.
NLTP -1527	The tanks shall be vented as high up the mast as practicable and fitted with a flame screen.
NLTP -1528	Both the Black water and Grey water collection tanks shall be provided with adequate access to enable maintenance and cleaning.
NLTP -1529	The black and grey water tank bottoms shall be sloped towards the discharge pump suctions to enable proper drainage when cleaning the tank.
NLTP -1530	A suitable number of clean-out ports, no less than 40mm diameter, shall be arranged throughout the black and grey water piping systems to permit proper cleaning and flushing.
NLTP -1531	A seawater line with manual isolation valve shall also be provided to enable flushing and cleaning of the black water tank and grey water tank.
NLTP -1532	Black and grey water tanks shall be fitted with local level indicators and high level alarms (90% full), annunciated at the Machinery Control Console.
NLTP -1533	The system shall be capable of being selected to discharge automatically when the grey water tank reaches 80% full capacity.
NLTP -1534	Manual ball valves shall be provided to select the discharge path.
NLTP -1535	Check valves shall prevent back flow from sea and connected system.

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NLTP -1536	Both black and grey water tanks shall be non-structural.															
NLTP -2099	Both black and grey water tanks shall be made from stainless steel.															
NLTP -1537	A commercial grade sewage treatment plant shall be installed to treat both black and grey water before overboard discharge.															
NLTP -1538	The treatment plant shall be certified to meet or exceed the requirements laid out in IMO resolution MEPC.159(55).															
NLTP -1539	The treatment plant should be appropriately sized to treat all onboard black and grey water.															
NLTP -1540	The black and grey water storage tanks shall be used to handle surges in system demand as well as those times when the treatment plant is inoperable.															
NLTP -1541	The system shall draw from the black and grey water tanks via separate connections in each tank to reduce the risk of cross contamination of either tank.															
NLTP -297	<i>6.8.1.4 593.4 Solid Waste Disposal Systems</i>															
NLTP -1542	The vessel shall have a stowage room for containers/bins to collect sorted garbage, recyclable material and regular waste.															
NLTP -1543	The solid waste storage room shall have a forced exhaust ventilation arrangement.															
NLTP -1544	The solid waste storage compartment shall be fitted with a wash basin and a separate Cold Water faucet to facilitate compartment washdown.															
NLTP -1545	<p>With all accommodation occupied the vessel shall be able to process and store the amount of solid waste as indicated in the table below for the maximum number of days of endurance plus 20%.</p> <table border="1"> <thead> <tr> <th>Waste Stream</th> <th>Volume/Person/Day (m³)</th> <th>Weight/Person/Day (kg/person/day)</th> </tr> </thead> <tbody> <tr> <td>Food and Galley Waste</td> <td>0.00085</td> <td>0.5488</td> </tr> <tr> <td>Cardboard and Paper</td> <td>0.0014</td> <td>0.5035</td> </tr> <tr> <td>Metal and Glass</td> <td>0.0014</td> <td>0.2449</td> </tr> <tr> <td>Plastic</td> <td>0.00043</td> <td>0.0907</td> </tr> </tbody> </table>	Waste Stream	Volume/Person/Day (m ³)	Weight/Person/Day (kg/person/day)	Food and Galley Waste	0.00085	0.5488	Cardboard and Paper	0.0014	0.5035	Metal and Glass	0.0014	0.2449	Plastic	0.00043	0.0907
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NLTP -1546	<p>Waste storage shall be divided as follows;</p> <ul style="list-style-type: none"> - Food waste; - Paper, books, fine cardboard, newspapers, magazines, etc. - Corrugated cardboard. - Metal cans and glass; and - Plastic. <p>Storage shall include separate areas for recyclables and non-recyclables.</p>															

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NLTP -1547	The Garbage stowage shall have a raised grating platform above the deck to allow fluid to drain to the lowest point of the compartment during cleaning and washing down activities.
NLTP -1548	A means of draining the stowage shall be fitted within the lowest, outboard point within the garbage compartment.
NLTP -1549	Containers for the collection of materials to be recycled are to be located in way of the galley/ mess area of the ship.
NLTP -298	<i>6.8.1.5 593.5 Chemical and Hazardous Waste Disposal Systems</i>
NLTP -378	<i>6.8.1.5.1 593.5.1 Spill Control and Disposal Kit</i>
NLTP -1550	The Contractor shall furnish a storage locker to accommodate hazardous material spill control and disposal kits.
NLTP -1551	The locker shall be not less than 1.25 metres W x 0.65 metres D x 2.00 metres H with adjustable shelving.
NLTP -1552	The locker shall be located in the superstructure and near access to the weather deck and close to a wash space.
NLTP -1553	The spill control and disposal kit locker shall not be located in the same area as the HAZMAT locker.
NLTP -379	<i>6.8.1.5.2 593.5.2 Hazardous Material Locker (HAZMAT)</i>
NLTP -1554	The Contractor shall provide a locker for the storage of hazardous material such as paint and inflammable liquids.
NLTP -1555	The locker shall be approximately 0.5 m ³ and be located in way of the weatherdeck.
NLTP -1556	The HAZMAT locker shall be designed in accordance with the Hazardous Materials Safety and Management Manual (A-GG-040-004/AG-001) and connected to a CO ₂ system.
NLTP -1557	Where feasible, alternatives to the Ionisation Type smoke detector shall be used.
NLTP -139	<i>6.8.2 594 Ship Escape, Evacuation and Survival Systems</i>
NLTP -299	<i>6.8.2.1 594.1 General</i>
NLTP -1560	The vessels shall carry life saving equipment for a complement of six in accordance with TCMS Life Saving Equipment Regulations.
NLTP -1561	The ship shall be furnished with Transport Canada approved lifesaving appliances, survival craft VHF radiotelephones, distress signals and SARTs as required and the necessary chocks, cradle, seating and support.
NLTP -300	<i>6.8.2.2 594.2 Life Rafts</i>
NLTP -1562	Sufficient life rafts shall be fitted in accordance with the Regulatory Authority.

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NLTP -2100	The life rafts shall be installed and fitted in self-launching cradles and provided with webbing and hydrostatic quick release gear.
NLTP -1563	Life rafts shall be stowed in open area on deck and clear of rigging with sufficient clearance to allow safe boarding.
NLTP -2102	The life rafts shall be kept clear of all vents, discharges, gangways, and ladders, or adequately shielded to prevent damage to the lifesaving equipment.
NLTP -301	<i>6.8.2.3 594.4 Life Jackets</i>
NLTP -1564	Life Jackets shall be provided in “float free” boxes similar to inflatable life raft stowage canisters with hydrostatic release located close to the designated embarkation stations.
NLTP -1565	Life Jackets shall comply with requirements of the TP14475E - Canadian Life Saving Appliance Standard.
NLTP -302	<i>6.8.2.4 594.5 Life Buoys</i>
NLTP -1566	The ship shall be fitted with Transport Canada approved ring type life buoys as required complete with self-igniting lights and lifelines. The life buoys shall be fitted in accessible positions and shall be capable of being readily cast loose.
NLTP -1567	Life Buoys shall comply with requirements of the TP14475E - Canadian Life Saving Appliance Standard.
NLTP -303	<i>6.8.2.5 594.6 Ship Abandonment Suits</i>
NLTP -1568	The ship shall be fitted with ship abandonment suits and sufficient locker space for their stowage.
NLTP -1569	Ship Abandonment Suits shall comply with requirements for immersion suits of the TP14475E - Canadian Life Saving Appliance Standard.
NLTP -7	7 GROUP 6 - OUTFIT & FURNISHING
NLTP -45	<i>7.1 600 - OUTFIT AND FURNISHING GENERAL</i>
NLTP -140	<i>7.1.1 602 Hull Designating and Markings</i>
NLTP -304	<i>7.1.1.1 602.1 General</i>
NLTP -1570	Hull designation and markings shall be provided for the vessel’s hull, decks, bulkheads and equipment.
NLTP -1572	All electrical equipment, cables, and systems shall be readily identified and labelled.
NLTP -1573	Labels shall be fully legible.
NLTP -1574	All label plates shall be manufactured from laminated phenolic or photo engraved, anodized aluminium or equal.
NLTP -1575	Plates may be secured using pressure sensitive adhesive providing a firm and permanent

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	bond.
NLTP -1576	Hazard warning plates shall be fitted to doors or other locations clearly visible to the operator prior to approaching the hazard.
NLTP -2152	Hazard warning plates must be bilingual
NLTP -1577	Hazard warning plates shall be grey with red characters.
NLTP -1578	Lettering on hazard warning plates shall be minimum height of 12 mm.
NLTP -1579	The word “WARNING” followed by a statement of the hazard and/or what action is to be taken shall be prominently displayed in both official languages on all hazard warning plates.
NLTP -1580	All electrical equipment/apparatus shall be supplied with nameplates in accordance with IEEE 45 on the equipment/apparatus.
NLTP -1581	Nameplates for generator, bus-tie, feeder and branch circuit breakers shall include the circuit number and designation, the rating of the circuit breaker trip element, or fuse size, required.
NLTP -1582	Identifying nameplates shall be provided for instruments, switch, fuses and any components not readily identifiable.
NLTP -1583	Identification plates shall be located on the doors or faces of all panel type enclosures.
NLTP -1584	Information plates shall be visible at the appropriate operating stations.
NLTP -380	7.1.1.1.1 602.1.1 Pennant Numbers
NLTP -1585	The ship’s pennant number, provided by Canada, shall be centre-punched in outline and painted in black on both sides of the vessel in accordance to General Hull Standard D-03-003-023/SF-001.
NLTP -2103	Depending on the stern configuration, the pennant number may be required on the transom.
NLTP -381	7.1.1.1.2 602.1.2 Nameboards
NLTP -1586	Nameboards shall be located on the superstructure port and starboard in accordance with General Hull Standard D-03-003-023/SF-001.
NLTP -2104	lifebuoys and rafts shall be marked with ship's name.
NLTP -382	7.1.1.1.3 602.1.3 Maple Leaf Insignia
NLTP -1587	Two official eleven-point Red Maple Leaf Emblems cut from aluminium plate conforming to standard DND Drawing No. G-R-9-H02-0020051-01 and install the emblem in accordance with MARCORD NA-02 Maple Leaf Emblem Wearing By HMCS Ships and Auxiliary Vessels.
NLTP -383	7.1.1.1.4 602.1.4 Builder’s Data Plaque

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NLTP -1588	A Builder's Data Plaque of a size agreed by Canada may be installed at a location agreed by Canada.
NLTP -384	7.1.1.1.5 602.1.5 Label Plates
NLTP -1589	Aluminium label plates made by metal photo process shall be provided for: - All compartments, lockers, cupboards, berths, hatches, scuttles and manholes throughout the ship. - All galley equipment. - All ventilation equipment including air-conditioning machinery, fans, valves, supply and exhaust vents, fire dampers etc. - All mechanical machinery/equipment, valve hand wheels, and gauges.
NLTP -2105	Nameplates shall be located in a prominent position.
NLTP -1590	Lettering shall be clear and concise with a minimum of abbreviations. Abbreviations shall be agreed in advance by Canada.
NLTP -1591	Label plates and markings for compartments, warning, ventilation, lifting appliances, piping, electrical cables etc shall be conformed to the Industry standard such as IEEE, ASTM etc.
NLTP -1592	Label plates and markings for compartments, warning signs, exits, means of escape, life-saving appliances, fire fighting and control and safety related items/equipment shall be in both official languages, English and French.
NLTP -2106	All required IMO Signs for means of escape and lifesaving equipment shall be fitted.
NLTP -141	7.1.2 603 Draft Marks
NLTP -1593	Draft marks shall be installed prior to launching.
NLTP -1595	Draft marks shall be fitted port and starboard at 200 mm intervals, both forward and aft.
NLTP -1596	The lowest mark shall be located 200 mm from the underside of the keel and the draft mark shall extend at least 600 mm above the deep departure waterline (EOL).
NLTP -1597	Draft marks shall be installed in accordance with the General Hull Standard D-03-003-023/SF-001.
NLTP -1598	All draft marks shall be of welded plate
NLTP -1599	Draft marks shall be painted white.
NLTP -142	7.1.3 604 Locks, Keys, Keyboards and Key Cabinets
NLTP -305	7.1.3.1 604.1 General
NLTP -1600	Locks shall be provided for all doors, hatches, manholes, scuttles, and lockers.

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NLTP -1601	Locks with identical keys shall be provided for all furniture (Desks, Lockers, Bookcases.etc) assigned to each person occupying each cabin.
NLTP -1602	Individual metal key tags and key rings shall be provided for all keys.
NLTP -1603	Each key tag shall bear the compartment name and /or item identification.
NLTP -1604	Three key sets for each lock shall be delivered with the ship.
NLTP -306	<i>7.1.3.2 604.2 Key Cabinets</i>
NLTP -1606	A lockable Key Cabinet shall be permanently mounted in the Bridge and contain one copy of all keys provided with the vessel.
NLTP -1607	A lockable Duplicate Key Cabinet shall be permanently mounted in the master's cabin and contain two copies of all keys provided with the vessel.
NLTP -2107	One additional set of keys for cabin door and personal space (desk, lockers, etc.) shall be provided for each berth on board.
NLTP -143	<i>7.1.4 605 Rat Proofing</i>
NLTP -1608	Wherever practical, rat proofing shall be accomplished by the nature of the construction rather than the use of additional fittings, plates and screens.
NLTP -1609	Gaps between, or under, furniture and equipment in accommodation and storerooms shall be eliminated or sealed.
NLTP -1610	Inaccessible void spaces shall be rat proofed.
NLTP -1611	Circular openings that will allow ship access shall not exceed 25 mm diameter and the side dimensions of square openings shall not exceed 25 mm.
NLTP -1612	Openings in louvers and parallel-sided openings longer than 25 mm such as around doors and expanded metal bulkheads shall not exceed 10 mm in width.
NLTP -1613	Deck gratings and portable flats in storerooms shall be constructed and fitted so that no openings are wider than 10 mm.
NLTP -1614	Ventilation openings requiring rat proofing shall be fitted with rat proof screens.
NLTP -1615	Rat guards shall be provided for each hawser and spring line.
NLTP -46	<i>7.2 610 - SHIP FITTINGS</i>
NLTP -144	<i>7.2.1 611 Hull Fittings</i>
NLTP -307	<i>7.2.1.1 611.1 Hull Fendering</i>
NLTP -1616	These types of vessels require the tug load to be spread over a larger area of hull of the naval vessel than most commercial vessels. The fendering shall have sufficient softness, depth and footprint to prevent pressure indentation or structural damage of thin hulled naval ships/vessels when the tug is pushing at full power.

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NLTP -1617	The fendering shall be non-marking.
NLTP -1618	To accommodate the movement of warships and submarines the fendering system shall extend 360° around the hull.
NLTP -2108	Fendering shall extend vertically to cover all locations where the tug is likely to come into contact with the vessel that the tug is moving.
NLTP -1619	The fendering system shall be retained in place by stainless steel bolts.
NLTP -308	<i>7.2.1.2 611.2 Eye Plates/Bolts</i>
NLTP -1620	Eye plates and eye bolts shall be installed in quantity, location and capacity as necessary to support lashing down, rigging and stowing portable items, lifting machinery for maintenance and repair, provide attachment to rigging lines and facilitate shipping of stores.
NLTP -1621	All eye plates and eye bolts shall have the safe working load plainly marked upon and shall be tested to at least twice the safe working load with no visible signs of permanent set in the eye plate or support.
NLTP -1622	Eyes or anchor points shall be provided in quantity and location as necessary for a fall-protection system to support person work aloft and access to unguarded structure in accordance with the Maritime Occupational Safety and Health Regulations, SOR/2010-120.
NLTP -1623	Chains, rings, hooks, shackles, swivels, pulley blocks, slings, and all other equipment used in hoisting shall be tested, marked and certified in accordance with the Regulatory Body requirements.
NLTP -309	<i>7.2.1.3 611.3 Brow/Gangway</i>
NLTP -1624	The vessel's brow, with a clear width of at least 760 mm, shall have a length of about 2/3 of the maximum breadth of the vessel, with non-skid walking surface, railings, and rollers at one end. Brow to be designed in accordance with ISO 7061 - Shipbuilding - Aluminum shore gangways for seagoing vessels.
NLTP -1625	Eye plates and fittings shall be provided for safety nets beneath the brow.
NLTP -1626	The brow as rigged shall comply with the CSA Safe working Practices Regulations.
NLTP -1627	Landing platform or series of steps or similar structure shall be provided, if required, to ensure safe access to deck.
NLTP -1628	Access points in gunwales for embarkation/debarkation shall be an inward opening gate capable of opening to 180o.
NLTP -2109	The gate shall be fitted with a means of securing it in an open position.
NLTP -1629	The brow shall be secured onboard in a location where it will not interfere with any operation.
NLTP -2110	When stowed, no part of the brow shall protrude past the side of the tug excluding all fendering.

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NLTP -145	7.2.2 612 Rails, Stanchions and Life Lines
NLTP -1630	Lifelines shall be fitted as necessary to allow for proper handling of the anchor, Jacob's Ladder and brow.
NLTP -1631	Lifelines shall be of coated wire.
NLTP -1632	All stanchions shall be galvanized steel.
NLTP -1633	Stanchions and lifelines shall not interfere with the deployment of the Rescue Boat.
NLTP -1634	Closed link chain and stanchions shall be provided around all low coamings or flush hatches, and elsewhere as necessary for protection of personnel.
NLTP -1635	Rails and stanchions for antenna platforms subject to radio frequency radiation shall be of non-metallic material.
NLTP -1636	Handrails and bulkhead grab rails shall be provided around all elevated platforms and gratings, walkways, switchboard, and moving parts of machinery.
NLTP -1637	Hand grabs shall be provided in way of manholes, hatches and escape routes.
NLTP -1638	Handrails made of 35 mm steel pipe shall be fitted at 900 mm above deck on sides and ends of all houses, to bulkheads in all exterior passages, casings, and stacks where crew have access.
NLTP -1639	Except in way of electrical equipment, such as switchboards, where hardwood shall be used, handrails shall be 25 mm pipe and shall be galvanized in locations where subject to corrosion.
NLTP -1640	Handrails supported from bulkheads or other surfaces shall have a clear hand space of at least 63 mm.
NLTP -1641	Handrails shall be fitted at 900 mm above the deck to corridor bulkheads of interior passageways and elsewhere, as necessary.
NLTP -1642	Grab rails of similar construction shall be fitted in the Bridge and accommodation areas as deemed necessary to aid personnel in ascending and descending or stepping from ladders.
NLTP -1643	Corrosion resisting grab rails shall be provided in shower stalls.
NLTP -146	7.2.3 613 Rigging and Canvas
NLTP -310	7.2.3.1 613.1 Rigging
NLTP -1644	Stays and guy wires shall be arranged to produce minimum interference with radio frequency antenna systems.
NLTP -1645	All rigging and pertinent fittings shall be provided to produce a thoroughly workable installation complete for the service intended and as necessary to facilitate maintenance and repair.
NLTP -1646	Running rigging shall consist of four signal halyards of braided nylon with non-metallic blocks connected to the mast by galvanized shackles.

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NLTP -1647	Cleats shall be provided port and starboard for securing halyards.
NLTP -311	<i>7.2.3.2 613.2 Protective Covers</i>
NLTP -1648	Suitable shaped protective covers shall be provided for rescue boat, searchlights, hawser, wire rope reels, fire monitors, AFFF canisters and other equipment requiring protection on weather deck.
NLTP -1649	All protective covers shall be made of commercial marine grade coated nylon cloth, coloured to match the ship.
NLTP -1650	Lacing grommets, Velcro fastenings and chaffing pieces of leather to be fitted where required.
NLTP -47	7.3 620 - HULL COMPARTMENTATION
NLTP -147	7.3.1 621 Non-Structural Bulkheads
NLTP -1651	Fire Protection shall be in accordance with TP 11469 Guide to Structural Fire Protection.
NLTP -2111	Joiner linings and bulkheads shall be installed in accordance with the conditions described in the schedule attached to the Product Certificate of Approval.
NLTP -1652	Outside corners of interior steel bulkheads in way of living and working spaces shall be rounded to prevent hazard to personnel.
NLTP -1653	The boundaries of gas or odour producing spaces shall be gastight and tested for gas tightness. The periphery of other divisional bulkheads should also be effectively light, dust tight.
NLTP -1654	Non-structural steel or joiner bulkheads surrounding wet spaces shall have all welded coaming extending above the deck covering.
NLTP -2112	All metal edges shall be deburred.
NLTP -148	7.3.2 622 Floor Plates and Gratings
NLTP -1655	Floor plates shall be aluminium or galvanized steel perforated grating.
NLTP -1656	Gratings shall be constructed of 6063-T6 aluminium alloy except that machinery space gratings shall be corrosion-resistant steel.
NLTP -1657	Where aluminium gratings are used, proper insulation shall be provided between the aluminium/steel interface.
NLTP -1658	Portable or hinged sections of floor gratings shall be fitted in areas where access is required below them for periodic inspection of equipment, maintenance, and cleaning.
NLTP -2113	Where access is required for operation of valves or other controls, hinged sections shall be used.
NLTP -1659	Gratings shall be provided for hatches anywhere lifelines or life rails are not provided.

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NLTP -1660	Gratings located over moving machinery shall be provided with screens with a mesh size of not more than 5 mm, made of the same materials as the grating, to prevent accidental contact with moving equipment.
NLTP -1661	Grating panels shall be supported by angles or bars spaced not to exceed 0.6 metres in the direction of the crossbars.
NLTP -1662	The maximum acceptable unsupported span for any grating shall be 1 metre in the direction of the bearer bars.
NLTP -1663	All grating panels shall be secured to the supporting framework by clips or bolts to ensure positive locking and ready disassembly.
NLTP -1664	Clips and bolts shall not extend above the surface of the grating.
NLTP -149	7.3.3 623 Ladders
NLTP -312	<i>7.3.3.1 623.1 General</i>
NLTP -1665	Ladders shall be installed as necessary to provide access to all compartments, passages, and all operating parts of machinery and systems.
NLTP -1666	Interior stairways, Rescue Boat, and life raft embarkation ladders, and pilot ladders shall be according to IMO Resolution MSC - 158(78), SOLAS.
NLTP -1667	Except where not feasible due to access location or the machinery arrangement, all ladders shall be inclined.
NLTP -2114	Ladders intended for frequent use shall incline fore and aft.
NLTP -1668	All ladders shall be of steel construction.
NLTP -313	<i>7.3.3.2 623.2 Inclined Ladders</i>
NLTP -1669	Angle of sloping ladders shall not exceed 85° above horizontal.
NLTP -1670	The rise of each step shall not exceed 230 mm.
NLTP -1671	The external and machinery space sloping ladders shall have handrails on each side.
NLTP -1672	Inclined ladders shall be bolted to the structure so as to allow relative motion between supporting fastenings at head and foot.
NLTP -2115	Where they are attached to deck coamings, the coamings shall be cut away to eliminate tripping hazards, as long as Regulatory Body and strength requirements are still met.
NLTP -1673	All interior accommodation stairs shall be constructed with treads of flanged plate, and stringers. The stringers shall be arranged toe out.
NLTP -1674	All exterior ladders and handrails shall be hot-dip galvanized after manufacture.
NLTP -1675	Treads on interior stairways shall be covered with resilient deck material similar to that on adjoining decks.

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NLTP -2116	Safety treads with integral nose moulding, of heavy duty, non-skid surface, shall be applied over complete surface of all stair treads.
NLTP -1676	A landing of similar non-slip material shall be provided at top and bottom of each stairway.
NLTP -1677	Treads shall be located at the head and foot of all inclined ladders, both sides of entrance doors having coamings, and approximately the entire area of each step on inclined ladders.
NLTP -1678	Sheet metal shields shall be fitted on the underside of ladders over machinery and equipment and in living spaces.
NLTP -2117	The shields shall be securely fastened to prevent vibration but shall be readily removable for cleaning and preservation.
NLTP -314	<i>7.3.3.3 623.3 Vertical Ladders</i>
NLTP -756	Vertical ladders shall have a minimum width of 450 mm.
NLTP -1679	Vertical ladders shall be provided access to or on masts, signal and navigational lights, ducts and in compartments for access to manholes and for escape.
NLTP -1680	The spacing of foot rungs shall not exceed 300 mm apart.
NLTP -1681	All vertical ladders shall be bolted in place.
NLTP -1682	Where conditions preclude the installation of vertical ladders such as escape trunks from machinery spaces or the chain locker, ladders may be constructed of separate rungs and welded to the bulkheads or other structures.
NLTP -315	<i>7.3.3.4 623.4 Portable Ladders</i>
NLTP -1683	The vessels shall be furnished with a Jacob's Ladder that it can be lowered over the side of a vessel and reach the waterline with at least two rungs submerged when secured from the highest point of the main deck edge at the vessels lightest operating condition.
NLTP -150	<i>7.3.4 624 Non-Structural Closures</i>
NLTP -1684	Doors, weather tight, gas tight, fire rated doors and joiner doors (B-0 rated) shall be selected from TCMS Approved Products Catalogue Index.
NLTP -1685	Doors shall be fitted with all necessary stainless steel locks, bolts, holdback hooks etc.
NLTP -1686	Kick-out panels and ventilation louvers may be fitted as required.
NLTP -1687	Doors to washplaces and heads shall have locks provided with interior latching arrangements.
NLTP -1688	Weathertight exterior doors shall be fitted with coamings and shall have suitable holdback arrangements.
NLTP -1689	All interior doors shall have a coaming height of 50 mm and shall have non-rattling holdbacks.

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NLTP -1690	Rubber faced bumpers or similar arrangements shall be provided to protect walls and furnishing.
NLTP -151	7.3.5 625 Airports, Fixed Portlights and Windows
NLTP -316	<i>7.3.5.1 625.1 General</i>
NLTP -1691	Windows and sidelights shall be so constructed to preserve the watertight/fire-rated integrity of bulkheads and the structure in which they are fitted.
NLTP -2118	All glass shall be heat-treated.
NLTP -1692	Sidelights shall be at least 450 mm diameter with deadlights hinged up and means of retaining deadlights in “up” position shall be rigid and secure.
NLTP -1693	Where port lights and or windows are fitted, adequate save-all arrangements shall be provided to prevent water or condensation dripping into the compartment.
NLTP -317	<i>7.3.5.2 625.2 Bridge Windows</i>
NLTP -1694	The Bridge shall be enclosed with windows around its full perimeter to provide 360 degree visibility.
NLTP -1695	The windows shall be arranged to provide an unobstructed view in all directions from the BCC.
NLTP -1696	The Bridge windows shall be large and wide and have direct access not blocked by consoles, tables or other equipment.
NLTP -1697	Framing between bridge windows shall be kept to a minimum and not be installed immediately forward of the operator position to provide, to the maximum extent possible, an unobstructed panoramic view.
NLTP -1698	To help avoid reflections in the interior, the bridge front windows shall be inclined from the vertical plane top out, at an angle of not less than 10° and not more than 25° in accordance with Transport Canada Ship Safety Bulletin.
NLTP -1699	All bridge windows shall be made of safety glass.
NLTP -1700	Sky ports shall be fitted to provide visibility above the tug.
NLTP -1701	To provide natural ventilation to the bridge, (2) of the windows, outboard (1) port and (1) starboard shall be of an opening type.
NLTP -1702	All Bridge windows, excepting sky ports, shall be electrically heated.
NLTP -1703	Each window heater shall be provided with its own controller, and the controller shall have indication to show when the heater is energized.
NLTP -318	<i>7.3.5.3 625.3 Window Wipers/Washers</i>
NLTP -1704	The windows in the Bridge (wheelhouse) shall be provided with 120 Volt, heavy-duty window wipers of the vertical type.

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NLTP -1705	The wipers shall assure visibility in heavy rain or spray.
NLTP -1706	Each wiper shall be provided with its own controller, and the controller shall have indication to show when the wiper is on.
NLTP -1707	One heated clearview shall be fitted facing forward on the bridge.
NLTP -1708	A window washer system shall provide a spray pattern of anti-freeze treated water that will remove film of salt spray to all the windows.
NLTP -1709	The system shall be operable below minus 20°C.
NLTP -1710	Suitable safe external access arrangements, with appropriate fall arrest protection, shall be provided to enable cleaning in event of failure of the window washing and de-misting systems.
NLTP -48	7.4 630 - PRESERVATIVES AND COVERINGS
NLTP -152	7.4.1 631 Painting
NLTP -1711	The paints used in a given coating system shall be from the same manufacturer where practicable.
NLTP -2119	Each coat of paint shall be compatible with the coat of paint that it will cover, including pre-construction primers that are to be retained as part of the final coating system.
NLTP -1714	To comply with Environment Canada Regulations, tributyltin (TBT) anti-fouling paint shall not be used to protect the vessels.
NLTP -1715	Only anti-fouling coatings registered under the Pest Control Products Act may be used.
NLTP -153	7.4.2 633 Cathodic Protection
NLTP -1716	The vessels shall be fitted with a cathodic protection system to protect the submerged hull, propulsion system, appendages, bilges, sea chests and ballast tanks against corrosion and electrolysis.
NLTP -1717	Anodes shall be sized for 4 years continuous operation.
NLTP -1718	High purity zinc anodes are to be installed and distributed equally throughout the ship's underwater length.
NLTP -1719	Anodes shall not be painted.
NLTP -1720	The anodes are to be securely fixed to the hull, by bolting to flat bars which are welded to the hull, and clean of all paint or grease before the vessel is launched.
NLTP -1721	Anodes are to be attached to the flat bars using mild steel bolts.
NLTP -1722	A set screw shall be fitted to the anode to ensure electrical contact.

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NLTP -154	7.4.3 634 Deck Covering												
NLTP -1723	All deck coverings shall provide a durable, seamless waterproof surface that provides a good foothold and can be easily maintained.												
NLTP -1724	The following deck coverings shall be installed: <table border="1" data-bbox="337 491 972 787"> <thead> <tr> <th>Area</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>Bridge, mess, cabins</td> <td>Non-slip, seamless deck covering on dex-o-tex underlay</td> </tr> <tr> <td>Washroom, Galley</td> <td>Non-slip, seamless deck covering on dex-o-tex underlay</td> </tr> <tr> <td>Tank Top</td> <td>Deck coating non-slip</td> </tr> <tr> <td>Switchboards, UPS, control consoles</td> <td>High dielectric strength rubber matting</td> </tr> <tr> <td>Exterior Deck</td> <td>Non-slip painted deck</td> </tr> </tbody> </table>	Area	Finish	Bridge, mess, cabins	Non-slip, seamless deck covering on dex-o-tex underlay	Washroom, Galley	Non-slip, seamless deck covering on dex-o-tex underlay	Tank Top	Deck coating non-slip	Switchboards, UPS, control consoles	High dielectric strength rubber matting	Exterior Deck	Non-slip painted deck
Area	Finish												
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Switchboards, UPS, control consoles	High dielectric strength rubber matting												
Exterior Deck	Non-slip painted deck												
NLTP -1725	Deck coverings (including cove base) shall be selected for the intended marine environment and installed as per the manufacturer's instructions.												
NLTP -1727	Steel decks shall be dry, clean and free from rust, grease, oil and other extraneous matter prior to deck covering installation.												
NLTP -1728	Deck covering shall not be laid until after all deck penetrations and deck foundations for fastening machinery, equipment, furniture, etc. are installed.												
NLTP -1729	Deck covering shall not be painted to hide stains and discoloration.												
NLTP -1730	Preparation of surfaces, and use of underlayment for deck covering installation, shall be per the manufacturer's instructions.												
NLTP -1731	Deck coverings in wet spaces where tiles are fitted shall be sloped to ensure proper drainage to scuppers.												
NLTP -1732	All deck coverings shall be thoroughly cleaned after finishing and "sealed" as recommended by deck coverings manufacturer.												
NLTP -2120	After installation the deck covering shall be protected to prevent any indentation or wear prior to delivery of the vessel.												
NLTP -1733	High dielectric strength rubber matting shall be provided in front and rear of all switchboards, UPS, control consoles, group control boards, and over deck areas on which personnel stand when servicing or turning energized electrical equipment or when shock hazards exist.												
NLTP -2121	Exposed weather deck surface shall be coated with non-skid coating.												
NLTP -2122	Self-adhesive non-skid deck coverings shall not be used.												
NLTP -155	7.4.4 635 Insulation												
NLTP -1734	Insulating materials shall be selected from TCMS Approved Products Catalogue Index, where practicable.												

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NLTP -1735	Lightweight, fire restricting SOLIMIDE Polyimide Foam may be used.
NLTP -1736	All insulation material shall be installed in accordance with the conditions described in the schedule attached to the Product Certificate of Approval.
NLTP -1737	Where insulation material is installed in more than one layer, each following layer shall be staggered and hard against the preceding layer, bedded and jointed with adhesives per insulation material manufacturer's recommendations.
NLTP -1738	Horizontal surfaces or decks over water tanks or fuel oil settling tanks shall be provided with equivalent insulation having sufficient load bearing characteristics as within accommodation and service spaces.
NLTP -1739	Insulation of vent and air conditioning ducts and piping shall be fitted as required.
NLTP -1740	All living, working, and public spaces that have a common boundary with heat producing spaces shall be insulated on the heated side.
NLTP -1741	Boundary surfaces of all spaces which are heated or air-conditioned, and which are exposed to the weather or are adjacent to unheated spaces shall be covered with thermal insulation.
NLTP -1742	Fire rated insulation shall be fitted for fire protection safety within accommodation areas, control consoles, and service areas.
NLTP -1743	Acoustic insulation shall be fitted as required to meet the noise requirements of the tug.
NLTP -1744	Acoustic insulation shall not be fitted to surface where fire-rated insulation has been specified.
NLTP -156	7.4.5 637 Sheathing
NLTP -1745	Sheathing shall be attached to all insulated surfaces.
NLTP -2123	Portable sections of sheathing shall be provided where required for accessibility in way of wiring, ducts, piping, air conditioning controls, filters at unit air conditioners, and other accessories.
NLTP -1746	Where sheathing and insulation are subject to damage, the sheathing shall be of galvanized sheet metal.
NLTP -1747	Galley spaces shall be sheathed with satin finish stainless steel.
NLTP -1748	All Storerooms shall have vertical wood sparring and deck gratings where deemed necessary.
NLTP -49	7.5 640 - LIVING SPACES
NLTP -157	7.5.1 641 Berthing Spaces
NLTP -319	7.5.1.1 641.1 General
NLTP -1749	Single cabins shall contain a single berth settee.

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NLTP -1750	Double cabins shall contain a 2-tier single berth.
NLTP -1751	Each single cabin shall contain the following furnishings; <ul style="list-style-type: none"> - (1) Desk - (1) chair in single cabin; - (1) bookcase; - (1) personal storage locker; - (1) toilet cabinet complete with mirror on the door and light situated above the cabinet, - (1) towel bar; - (1) desk light; - (2) berth lights; - (1) waste basket; - (2) coat hooks; - sidelight curtains with hooks, holdbacks and rod; - berth curtain and rod for each berth; and - berth ladder for where an upper berth is fitted.
NLTP -2124	Each double cabin shall contain the following furnishings; <ul style="list-style-type: none"> - (1) Desk - (2) chairs; - (1) bookcase; - (2) personal storage lockers in double cabin; - (1) toilet cabinet complete with mirror on the door and light situated above the cabinet, - (2) towel bars; - (1) desk light; - (2) berth lights; - (1) waste basket; - (2) coat hooks; - sidelight curtains with hooks, holdbacks and rod; - berth curtain and rod for each berth; and - berth ladder for where an upper berth is fitted.
NLTP -2125	An automatic Telephone connection shall be provided in the Master's and Engineer's cabin.
NLTP -1752	Ventilation grilles and diffusers shall not be obscured by other fittings.
NLTP -1753	Fixed furniture, such as berths and personal stowage lockers, shall be fitted in such a manner as to avoid gaps and preclude any void space between the piece of furniture and surrounding bulkheads or between adjacent pieces of furniture.
NLTP -1754	Where port lights and or windows are fitted, adequate save-all arrangements shall be provided to prevent water or condensation dripping into the compartment.
NLTP -320	7.5.1.2 641.2 Berths
NLTP -1755	Berths shall be oriented with their length along the fore and aft ship's axis, with the head of the berth forward.

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NLTP -1756	Individually controlled lighting and ventilation shall be provided for each berth.
NLTP -1757	Berths in double cabins shall be single, 2-tier. All berths shall be designed for one standard size mattress with a minimum dimension of Length 2000mm x Width 800mm x Thickness 150mm.
NLTP -1758	Each berth tier shall be provided with: - A mattress, - A reading light with individually controllable switch properly positioned; - Stowage space for a personal floatation device (approximately 180 mm x 320 mm x 140 mm); - Stowage for an emergency escape survival suit; - Stowage space for an Emergency Escape Breathing Device (approximately 130 mm x 260 mm x 270 mm); and - Stowage space for reading material (approximately 300 mm x 300 mm x 75mm).
NLTP -1759	Drawers shall be fitted below the lower tier of the berth.
NLTP -1760	Each berth shall be fitted with removable rails, fixed privacy screen panels at each end and a privacy curtain.
NLTP -1761	Grab rails and ladders shall be fitted as required to assist in getting in and out of the upper berth.
NLTP -321	<i>7.5.1.3 641.3 Personal Storage Locker</i>
NLTP -1762	One (1) personal storage locker shall be provided for each crewmember. All personal storage lockers shall have minimum dimensions as per CSA Towboat Crew Accommodation Regulations for clothes closet. The lockers shall provide the following types of stowage: - Minimum (2) shelves; - Boot stowage; - Hanging bar for clothes; and - Clothes hooks.
NLTP -1763	All Drawers shall be fitted with stops.
NLTP -1764	All Doors shall be fitted with a positive closing mechanism.
NLTP -1765	Lockers/drawers assigned to a particular berth shall be furnished with cylinder locks keyed alike.
NLTP -1766	Lockers shall be identified by a numbered plate on the front.
NLTP -1767	Lockers shall be located so they will permit free air circulation and free unobstructed access throughout the compartments.
NLTP -322	<i>7.5.1.4 641.4 Desks, Writing Tables</i>
NLTP -1768	Desks shall be of a single pedestal type.

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NLTP -1769	Single pedestal desks shall be a minimum of 1100 mm long x 750 mm depth and shall be 750mm high from the deck to the writing surface.
NLTP -1770	The desk top shall have a minimum thickness of 35 mm.
NLTP -1771	A two drawer deck mounted filing cabinet shall be fitted below the desk top, either to the right or left of the sitting position to suit the compartment configuration.
NLTP -1772	Each desk shall be fitted with an individually switched desk light.
NLTP -323	<i>7.5.1.5 641.6 Chairs</i>
NLTP -1773	Each desk where fitted shall be provided with an adjustable desk chair of a lightweight design with upholstered seat on a light metal frame with arm rests and a padded seat and back.
NLTP -158	<i>7.5.2 644 Sanitary Spaces and Fixtures</i>
NLTP -324	<i>7.5.2.1 644.1 General</i>
NLTP -1774	A minimum of (2) gender-neutral facilities shall be provided. Each one shall be fitted with the following; <ul style="list-style-type: none"> - (1) water closet with hinged seat; - (1) washbasin with overflow in a vanity type installation with waterproof finished counters and backsplash; - (1) toilet cabinet with mirror on the door and light situated above the cabinet; and - (1) shower stall with interior light, curtain, curtain rod, hook and holdback.
NLTP -1775	The washroom shall be outfitted with all necessary fittings including; <ul style="list-style-type: none"> - (1) toilet tissue roll holder; - (1) towel rail; - (1) paper towel dispenser/disposal unit; - (1) shaver outlet; - (1) soap dish in shower stall if none fitted integral to shower unit; - (1) soap dish in way of washbasin; - (1) waste container; - coat hooks; and - grab rails.
NLTP -1776	All trim for fixtures and all accessories shall be chrome plated cast or forged brass or stainless steel and shall be of matching design for uniformity.
NLTP -1777	Fixtures that are liable to damage by excessive bolt tightening shall be mounted with concussion washers between fixtures and metal supports.
NLTP -1778	All washroom entrance doors shall have a locking device for privacy.
NLTP -2126	Washroom locking devices shall be activated from inside.
NLTP -1779	Entrance doors shall feature gender neutral signs fitted permanently.

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NLTP -2127	All sinks, toilets, counters, etc. fitted in sanitary spaces shall be bulkhead mounted, vice deck mounted, to facilitate cleaning of decks.
NLTP -2128	Drains and pulmbing for toilets and sinks shall be routed through the deckhead or bulkheads rather than through the deck of the deck in sanitary spaces.
NLTP -325	<i>7.5.2.2 644.2 Shower Stalls</i>
NLTP -1780	Shower outfits shall include a pressure temperature compensating mixing valve and a push button or level-operated control valve. The following shower accessories shall be installed unless otherwise specified: - Soap dish, unless integral with shower stall unit; - Shower Curtain; - Shower curtain rod, tie-back and tie-back hook; - Grab rail.
NLTP -1781	Shower stall modules shall be of a one piece modular construction with an integral base.
NLTP -1782	The base shall be sloped to facilitate drainage and be fitted with a saveall and shower curtain to prevent water from entering the toilet space.
NLTP -1783	The base shall be fitted with a flush mounted drain located at the lowest point.
NLTP -1784	Shower stall units shall be fabricated or moulded from materials that do not corrode or requires painting or coating and have a non-slip floor.
NLTP -1785	The entrance to the shower module shall have rounded stall corners.
NLTP -1786	Water Drains and supply lines to both the control valve and the shower head shall run outside of the shower module.
NLTP -1787	Showers shall be fitted with a thermostatic mixing/flow control valve and incorporate a safety device to prevent scalding.
NLTP -1788	Decks in sanitary spaces shall be sloped to facilitate drainage and shall be fitted with scuppers at their lowest point to ease drainage and avoid pooling of water.
NLTP -1789	All scupper covers shall be free to be lifted easily for cleaning.
NLTP -326	<i>7.5.2.3 644.3 Washroom Cabinets</i>
NLTP -1790	Cabinets shall be of stainless steel construction and shall be equipped with stainless steel shelves with edge rails and a mirror on the door.
NLTP -1791	Cabinet doors shall have secure catches.
NLTP -1792	Cabinets shall be mounted so that the centre of the mirror is 1.64 m above the deck.
NLTP -327	<i>7.5.2.4 644.4 Water Closets</i>
NLTP -1793	- Water closets (vacuum type) shall be vitreous china.

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NLTP -1794	A toilet paper holder and grab rail shall be installed at each water closet.
NLTP -1795	- A toilet seat, hinged, open front type, shall be provided for all water closets.
NLTP -328	<i>7.5.2.5 644.5 Sanitary Space Fixtures</i>
NLTP -1796	Washbasins, showers and service sinks shall be provided with hot and cold fresh water.
NLTP -1797	Cut-off valves shall be installed to permit adjustment of water supply.
NLTP -1798	Washbasins shall be stainless steel and shall be provided with self-closing and washerless faucets.
NLTP -1799	Washbasins, unless otherwise specified, shall be provided with the following accessories: - Soap dish; - Toilet shelf with edge rails; - Coat hook; - Towel rack.
NLTP -159	<i>7.5.3 645 Dining Leisure and Community Spaces</i>
NLTP -1800	Mess and lounge facilities compliant with the TC Towboat Crew Accommodation Regulations shall be provided.
NLTP -1801	A mess, contiguous to the Galley, shall be provided for the crew. The mess shall be fitted with upholstered settees and table(s) having a seating capacity for 10 crew.
NLTP -1802	A cupboard and counter, and drawers for stowage of cutlery and utensils for the entire complement shall be provided.
NLTP -1803	Cupboards and counter shall be aluminium or stainless steel.
NLTP -1804	A bookcase shall be fitted.
NLTP -1805	Outfit shall include window curtains and rods and coat hooks as applicable.
NLTP -1807	Dining area outfit and furnishings shall be designed to ensure there are no crevices or inaccessible voids which could collect food, waste or other extraneous matter.
NLTP -1808	For the combined lounge/recreation area and mess an audio/visual entertainment cabinet shall be fitted with an HD television, Blue Ray player, Blue Ray storage, and stereo equipment.
NLTP -1809	The mess shall be outfitted for regional/global broadband connectivity: (SAT TV/Internet/Phone).
NLTP -50	<i>7.6 650 - SERVICE SPACES</i>
NLTP -160	<i>7.6.1 651 Commissary Spaces</i>

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NLTP -1810	The Galley shall be equipped to allow the crew to prepare meals. The Galley shall consist of food storage spaces, food preparation area, cooking spaces, and a space for sanitary stowage of garbage and recyclables.
NLTP -1811	The Galley Shall be equiped withn the following Cooking Appliances: - (1) domestic type electric range all stainless steel finish with grill top, (2) burners and convection oven of 57 litre (L) minimum. Unit top shall be fitted with sea rails also constructed of stainless steel; - (1) range exhaust hood of stainless steel construction incorporating a grease trap and filter; - (1) vertical upright commercial type refrigerator of 500 L minimum, with stainless steel finish. Door latch shall be locking and suitable for marine use; - (1) vertical upright commercial type freezer of 595 L minimum, with stainless steel finish. Door latch shall be locking and suitable for marine use; - (1) microwave oven of 34 L minimum; - (1) dishwasher; - (1) 4-slice heavy-duty automatic toaster; - (1) 12-cup minimum commercial quality coffee maker fitted with sea rails; and - (1) bulkhead mounted heavy duty electric can opener.
NLTP -1813	Sink counters shall be of all stainless steel construction with 450 mm high backsplash in way of sink.
NLTP -1814	Sink in commissary space shall be fitted with soap dispenser and a paper towel dispenser.
NLTP -1815	All other backsplashes for countertops shall be 150 mm in height.
NLTP -2129	The galley shall be fitted with a stainless steel double sink with with radius corners throughout, each side approximately 300 x 300 x 250 mm
NLTP -1816	A standard single lever, mixing valve faucet and spray nozzle attachment on flexible hose should serve the double sink.
NLTP -1817	Equipment abutting other pieces of equipment or furnishing such as table tops, counter tops and bulkheads shall have stainless steel blank-off strips installed to avoid grease or soil catching crevices.
NLTP -1818	Panels of quilted stainless steel shall cover bulkheads behind the heat producing equipment.
NLTP -1819	The space between the heat producing equipment and the bulkhead shall be sealed against entry of vermin, cooking ingredients or other extraneous matter.
NLTP -1820	Tables and counters should be provided to the maximum practical extent. Normal width of counters accessible from one side only shall be 750 mm, with a height above deck between 915 and 1065 mm.
NLTP -1821	All counter tops shall, wherever possible, be provided with under counter cabinet units.
NLTP -1822	Under counter cabinet units shall include: - Shelves with upstands for packaged and canned supplies; - Stowage for pots and pans in form of deep drawers with spaces sized for utensils; - Racks for pot lids; - Cutlery and tool drawer(s).

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NLTP -1823	Cupboards shall be of all-stainless steel construction, bulkhead mounted with shelving, self-closing hinged doors with positive closing latches and locking arrangements.
NLTP -1824	Cupboards above sink counter shall have dividers sized for dishes.
NLTP -1825	Over counter top cabinet units shall suit the space available and should be either 230 mm in depth and sited 450 mm above the counter top, or 380 mm in depth and sited 750 mm above the counter top.
NLTP -1826	Shelves and drawers shall be removable for easy cleaning and drawers shall be provided with positive closing latches.
NLTP -1827	Drawers shall be fitted with a back-stop restraint.
NLTP -1828	No drawers shall have a height less than 100 mm.
NLTP -1829	A garbage container with a minimum capacity of 30 L with a self-locking lid shall be provided.
NLTP -1830	All portable galley equipment shall be provided with appropriate storage for securing at sea.
NLTP -1831	Construction details of furnishings and equipment shall provide for the elimination of sharp edges, corners and burrs which might cause injury to personnel.
NLTP -2130	The entrance door(s) shall be large enough to allow for the removal of the largest component of galley equipment without the need to dismantle it.
NLTP -2131	Galley entrance doors shall not be less than 900 mm wide.
NLTP -1832	Entrance doors to Galley shall have a 150 mm coaming.
NLTP -161	7.6.2 655 Laundry Spaces
NLTP -1833	As far as space permits the self-serve laundry area shall be co-located in way of the accommodation area.
NLTP -1834	A stackable, commercial quality clothes washer and dryer shall be fitted.
NLTP -1835	The dryer shall have a dedicated exhaust system to the vessel exterior.
NLTP -1836	A laundry tub with hot and cold fresh water supply shall be co-located with the washer/dryer.
NLTP -1837	A soap dispenser, a paper towel dispenser and a supply cabinet shall be fitted in way of the laundry tub.
NLTP -1838	Supply cabinet to be sized to accommodate laundry supplies.
NLTP -51	7.7 660 - WORKING SPACES
NLTP -162	7.7.1 663 Electronics Control Centres Furnishings

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NLTP -329	<i>7.7.1.1 663.1 Bridge Configuration</i>
NLTP -1839	The size and layout of the Bridge shall accommodate normal operations.
NLTP -1840	The Bridge shall be outfitted with navigational aids, communications and electronic equipment and the following: <ul style="list-style-type: none"> - Chart table with a top at least 750 mm long x 750 mm wide, 915 mm above floor and fitted with drawers and lockers underneath; - Chart table lamp; - Flag locker; - Bookshelf; at least one linear metre long and 300mm deep; - Bridge Control Console (BCC) to suit installation of steering, navigation, and communication equipment and controls; - Machinery Control Console(MCC) to suit installation of alarm, machinery controls and indicators, and auxiliary machinery monitors and controls; - Firefighting (FiFi) Control Console (FCC); - Two Captains chairs with sliding base for sitting or standing, (1) in way of Master's position and (1) in way of Engineer's position; - Clock and barometer; - Clinometer; - Magnetic compass located centreline; - Medical cabinet, including first aid kit; and - Stowage spaces for shapes, binocular boxes adjacent to helm position, lead lines.
NLTP -1841	All bridge consoles and equipment shall be ergonomically designed and arranged in a harmonious layout.
NLTP -2132	Handrails shall be fitted under all windows and at all consoles and control positions.
NLTP -1844	A separate Firefighting (FiFi) Control Console (FCC) shall be fitted.
NLTP -385	<i>7.7.1.1.1 663.1.1 Bridge BCC and MCC</i>
NLTP -1845	The BCC and MCC consoles may be integrated but shall be arranged to allow both the master and the engineer to simultaneously operate and monitor the associated equipment respective to their duties.
NLTP -1846	The BCC shall be carefully laid out to accommodate instruments and controls for maximum convenience, visibility, and accessibility.
NLTP -1848	A BCC shall be situated at or near the centre of the bridge. It shall be placed so that the master, when standing at the centreline can, as the first priority, control the vessel's thrust and steering and, as second priority, operate and monitor the primary navigation and communications equipment.
NLTP -1849	While standing at the BCC, the master shall be able to keep sight of the ship or vessel under tow as well as the vessel's own working decks while working the tug in either forward or astern modes.

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NLTP-1850	From the standing BCC, the master shall be able to operate the vessel's propulsion controls, winch controls, primary radar and navigation systems, VHF radio communications, and ancillary controls.
NLTP-1851	The location and configuration of the BCC shall not force the master to circumvent a large unbroken bank of equipment to have rapid access to the bridge windows.
NLTP-1852	An MCC shall be fitted and arranged to allow the engineer to control and monitor the propulsion, electrical, and auxiliary systems for the vessel.
NLTP-1853	The console shall incorporate all gauges, instrumentation, and alarms required to fully monitor ships propulsion system and auxiliaries.
NLTP-1854	The BCC may comprise two or more co-located units to enable the watch officer to traverse through and around it.
NLTP-386	7.7.1.1.2 663.1.2 Bridge Swivel Chairs
NLTP-1855	Two adjustable, swivelling chair with sliding bases shall be provided, (1) in way of the master's position and (1) in way of the engineer's position, and fixed to the deck at the respective console locations.
NLTP-1856	The swivel chairs should be of sufficient height to permit the master to see the stem of the vessel while seated.
NLTP-387	7.7.1.1.3 663.1.3 Centreline Pelorus
NLTP-1857	The centreline pelorus shall be placed as far forward in the Bridge as is practical, allowing personnel unobstructed, 360-degree access.
NLTP-1858	Visual bearings from the centreline pelorus shall be possible throughout a forward arc from as far aft as possible of one beam to the other. This continuous forward arc shall include at least 22.5 degrees abaft of each beam.
NLTP-1859	There shall be no visual obstruction looking dead ahead from the centreline pelorus to the stem of the vessel, and to 90 degrees either side of dead ahead.
NLTP-1860	Outside visibility shall be restricted only by window pillars.
NLTP-1861	All equipment and fittings inside the Bridge shall be placed to minimize obstructing outside vision from the centreline pelorus.
NLTP-388	7.7.1.1.4 663.1.4 Chart Table
NLTP-1862	The chart table shall be located aft of the BCC facing aft.
NLTP-1863	Stowage for navigation publications and items for chart work shall be incorporated into the chart table.
NLTP-389	7.7.1.1.5 063.1.5 Bridge Storage Lockers
NLTP-1864	The wheelhouse shall be furnished with lockers for miscellaneous navigational aids such as charts and publication, binoculars etc.
NLTP-1865	Stowage lockers shall be provided for documents and publication.

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NLTP -163	7.7.2 665 Workshops, Labs and Test Areas
NLTP -1866	A Workshop/Work area shall be provided in or near the machinery space.
NLTP -1867	The Workshop/Work area shall be furnished with a workbench with the top work area not less than 1524 mm x 914 mm approximately 940 mm height.
NLTP -1868	The workbench shall feature a coaming, drawers, shelves and lock-up doors.
NLTP -1869	A multi-purpose lathe, a 6-inch parallel jaw vice, milling machinery, and a drill press shall be fitted to the bench.
NLTP -1870	Special tools for completion of first line operator maintenance for the vessel, complete with appropriate stowage, shall be provided.
NLTP -1871	Suitable stowage for an anticipated tool fit shall be provided.
NLTP -1872	Bins and racks shall also be fitted to store chain blocks, slings, eyebolts and other maintenance items.
NLTP -1873	Two electrical outlets for a minimum of 115 volts AC and one Low Pressure air points for power tools shall be arranged close to the workbench.
NLTP -1874	All electrical cabling, compressed air lines, and fluid leads shall be protected.
NLTP -52	7.8 670 - STOWAGE SPACES
NLTP -1875	Storerooms and stowage spaces including lockers, cupboard and drawers shall be fitted to provide stowage facilities for ship provisions, equipment or gear associated with the vessel's function.
NLTP -1876	Shelving and stowage bins shall be provided in the stowage spaces.
NLTP -1877	All storerooms, stowage spaces and lockers shall be fitted with locking arrangements.
NLTP -164	7.8.1 671 Lockers and Special Stowage
NLTP -1878	Lockers may be arranged in a common stowage space to afford convenience and economy of space.
NLTP -1879	All exterior lockers shall be weathertight and be supplied with a drainplug and keep chain.
NLTP -1880	All lockers shall be metal construction and fitted with a hasp and staple unless otherwise specified.
NLTP -1881	Lockers for flammable liquids shall be of steel.
NLTP -1882	Lockers shall have louvres or other similar means of circulation unless otherwise noted for specific lockers.
NLTP -1883	Where lockers are fitted within compartments and in way of equipment, passage between the stowage bins/locker and equipment shall be as least 610 mm wide and

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	provide adequate maintenance envelope for the equipment installed in the compartment.
NLTP -330	<i>7.8.1.1 671.1 First Aid Cabinet</i>
NLTP -1884	A First Aid Cabinet, of metal construction, shall be bulkhead mounted in Bridge.
NLTP -2134	The vessels shall have a First-Aid station furnished with first aid supplies and equipment in accordance with the Marine Occupational Safety and Health Regulations.
NLTP -2135	Additional stowage provision shall be provided at the training station to store items that are listed in Type "C" first-aid kit as per Treasury Board of Canada Chapter 2-5 "Occupational Safety and Health" First-Aid Safety and Health Directive.
NLTP -331	<i>7.8.1.2 671.2 Linen Locker</i>
NLTP -1885	The Linen locker shall provide the necessary stowage for one complete set of bed linen for the ship's complement. The locker shall be fitted with metal shelving.
NLTP -332	<i>7.8.1.3 671.3 Wet Gear/Drying Locker</i>
NLTP -1886	The locker shall be fitted with convenient access from the weather deck.
NLTP -1887	The locker shall be fitted with a hanging rail, drip tray over the entire length, twin double doors with adequate closing devices.
NLTP -1888	Doors shall be louvered to allow circulation of hot air by means of a forced air heater and natural exhaust to the exterior.
NLTP -333	<i>7.8.1.4 671.4 Cleaning Gear Locker</i>
NLTP -1889	The locker shall be fitted to accommodate cleaning equipment and cleaning products.
NLTP -1890	The locker shall be fitted with adjustable, perforated shelves fitted with keep battens to ensure the stowage is secure when partially empty.
NLTP -1891	Secure stowage, racks or bins shall be fitted as required for brooms, mops, buckets, and cleaning products.
NLTP -334	<i>7.8.1.5 671.5 Fuel Oil Spill Control Locker</i>
NLTP -1892	The fuel oil spill control locker shall be about 1.5 cu. Metres and shall be located for direct access from the weather deck.
NLTP -335	<i>7.8.1.6 671. 6 Rescue Boat Locker</i>
NLTP -1893	The Rescue Boat Locker shall be located adjacent to the rescue boat stowage area for spare outboard motor, lifejackets, fenders, boat gear, oars and paddles, and toolbox.
NLTP -2136	The rescue boat locker shall be fitted with the necessary stowage aids to secure all items stored.
NLTP -336	<i>7.8.1.7 671.7 Fire Fighting Gear Lockers</i>

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NLTP -1894	Firefighting Gear Lockers shall be fitted in the deckhouse port and starboard.																
NLTP -1895	The lockers shall be fitted with adjustable, perforated metal shelving.																
NLTP -2137	Each shelf shall be lipped and have portable keep battens.																
NLTP -1896	The lockers shall be fitted with grating on deck and plugged drain holes on outboard corners.																
NLTP -165	7.8.2 672 Storerooms and Issue Rooms																
NLTP -337	7.8.2.1 672.1 Provision Storeroom																
NLTP -1897	The provisions storeroom shall be fitted with the following; <ul style="list-style-type: none"> - Adjustable, 3-tier, stainless steel shelving, with easy to clean surfaces fitted with keep battens to ensure the storage is secure when partially empty; - Adjustable shelving to have a positive locking mechanism so there is no danger of shelves becoming loose or shifting with the shelf fully loaded; - A step-stool with rubber padded feet complete with stowage; - A freezer unit for frozen provisions for (10) days with adequate holding down arrangement; - A refrigerator with volume capacity to accommodate dairy, fruit, vegetable and potato stores requirements for (10) days with adequate holding down arrangement. 																
NLTP -1898	The temperature in the Provision Storeroom (not including the Fridges and Freezers) shall be maintained between 11° to 15° Celsius.																
NLTP -1899	The volume of stores is calculated from the following formula; Volumetric Requirement = Space Factor x No. of Days x No. of Crew Volume for provisions store shall be based on space factors as outlined in the table below.																
	<table border="1"> <thead> <tr> <th>Category</th> <th>Storeroom</th> <th>Space Factor (per crew/day)</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Provision</td> <td>Dry Provision</td> <td>0.008707 m³</td> </tr> <tr> <td>Freezer (Meat, fish and all frozen provisions)</td> <td>0.006354 m³</td> </tr> <tr> <td>Dairy</td> <td>0.009186 m³</td> </tr> <tr> <td>Fruit and Vegetable</td> <td>0.005244 m³</td> </tr> <tr> <td>Potato</td> <td>0.000844 m³</td> </tr> <tr> <td>Soft Drink</td> <td>0.00475 m³</td> </tr> </tbody> </table>	Category	Storeroom	Space Factor (per crew/day)	Provision	Dry Provision	0.008707 m ³	Freezer (Meat, fish and all frozen provisions)	0.006354 m ³	Dairy	0.009186 m ³	Fruit and Vegetable	0.005244 m ³	Potato	0.000844 m ³	Soft Drink	0.00475 m ³
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NLTP -338	7.8.2.2 672.2 Deck Stores																

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NLTP -1900	Deck stores shall be provided with all necessary shelves, bins, and stowage racks for the stowage of, as a minimum, mooring and towing hawsers and other ropes, spare mooring gear, rope reels, scramble net, and Jacob's Ladder.
NLTP -1901	Deck Stores shall be directly accessible from the weather deck.
NLTP -1902	Shelving shall be adjustable, perforated metal with keep battens as appropriate.
NLTP -1903	Deck stores shall be force ventilated.
NLTP -339	<i>7.8.2.3 672.3 Fire Fighting Equipment Storeroom</i>
NLTP -1904	The Firefighting Equipment Storeroom shall be located below deck and fitted with adjustable metal shelving. Each shelf shall be lipped and provided with portable keep battens.
NLTP -1905	The storeroom shall be fitted with (4) standard personal stowage lockers for fire fighting gear.
NLTP -1906	The lockers shall be of metal construction.
NLTP -340	<i>7.8.2.4 672.4 Spare Parts Store</i>
NLTP -1907	A storage shall be fitted to facilitate stowage of machinery spare parts and supplies to support at-sea operations for 10 days.
NLTP -1908	The store shall be readily accessible from the Main Machinery Space and Workshop Area.
NLTP -1909	The Spare Parts Store shall be fitted with lockers fitted with adjustable, lipped metal shelving.
NLTP -8	8 GROUP 7 - ARMAMENT
NLTP -53	<i>8.1 760 - SMALL ARMS AND PYROTECHNICS</i>
NLTP -166	<i>8.1.1 761 Small Arms and Pyrotechnics Stowage</i>
NLTP -1910	A pyrotechnics stowage locker shall be provided.
NLTP -1911	The locker shall capable of being flooded and shall be installed on the exterior of the superstructure on the wheelhouse deck as close as practical to the Bridge.
NLTP -1912	The locker shall be watertight and constructed similar to NSN 2090-21-920-7059 (DND Drawing No. 0069323).
NLTP -1913	The locker shall conform to the requirements of C-09-153-003/TS-000 Explosives Safety Manual Volume 3 –Ships and National Defence Security Policy Chapter 28 Small Arms and Ammunition.
NLTP -1914	The approximate outer dimension of the locker should be 1.20 metres long by 0.56 meters wide by 0.72 metres high.

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NLTP -1915	The actual dimension and shelving/rack arrangement of the pyrotechnics locker shall be designed to allow for the following minimum compartment sizes: <ul style="list-style-type: none">- One (1) compartment with dimensions of 0.90 metres long by 0.12 metres wide by 0.61 metres high.- One (1) compartment with dimensions of 0.33 metres long by 0.34 metres wide by 0.61 metres high.- Two (2) compartments with dimensions of 0.26 metres long by 0.33 metres wide by 0.61 metres high.
NLTP -1916	The vessel shall comply with the Canadian Forces, Transport Canada, TP 7319E-Standard for Pyrotechnic Distress Signals and Similar Devices, CFP 153, and SOLAS requirements for required pyrotechnics.

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ANNEX G

BID EVALUATION MATRICES

FOR THE

NAVAL LARGE TUG PROJECT

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1.0 Bid Evaluation Matrices

- 1.1 For the Technical Bid, as part of their proposal, the Bidder must complete the following Tables to indicate where in their bid the supporting information can be found;

Appendix A - Mandatory Requirements – Technical Bid (Section I)

Table 1 - Technical Compliance Matrix

Table 2 - Technical Bid Evaluation Matrix

- 1.2 For the Technical Bid, as part of their proposal, the Bidder must also complete the Technical Compliance Matrix letter of Acknowledgement for Design and Construction of Naval Large Tugs at Appendix C.

- 1.3 For the Management Bid, as part of their proposal, the Bidder must complete the following Tables to indicate where in their bid the supporting information can be found;

Appendix B – Mandatory Requirements – Management Bid (Section II)

Table 3 - Management Bid Evaluation Matrix – Project Management Plan

Table 4 - Management Bid Evaluation Matrix – Master Plan and Schedule

Table 5 - Management Bid Evaluation Matrix – Quality Plan

Table 6 - Management Bid Evaluation Matrix – Other Requirements

- 1.4 For the Financial Bid, the Bidder must complete the following Tables to indicate where in their bid the supporting information can be found;

Appendix D – Mandatory Requirements – Financial Bid (Section III) in a separately bound folder. **The Financial Bid must not be attached to or combined within any other part of the bid and prices must not appear in any other area of the proposal except the Financial Bid.**

Table 7 - Financial Bid Evaluation Matrix

- 1.5 For the Certifications Bid, the Bidder must complete the following Tables to indicate where in their bid the supporting information can be found;

Appendix E – Mandatory Requirements – Certifications Bid (Section IV)

Table 8 - Certifications Bid Evaluation Matrix

- 1.6 For Security, Financial and Other Requirements, the Bidder must complete the following Tables to indicate where in their bid the supporting information can be found;

Appendix F – Mandatory Requirements – Security, Financial and Other Requirements

Table 9 - Security, Financial and Other Requirements

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Appendix A - Mandatory Requirements - Technical Bid (Section I)

Table 1 - Technical Compliance Matrix

SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation
<p>The Technical Compliance Matrix lists all the Technical Mandatory Requirements for the NLTs that have been selected from the SRD (Annex A SRD and SOW of the RFP) for evaluation purposes.</p>				
<p>a. "Proven Parent" Design The Bidder must provide objective evidence with their proposal to demonstrate that they have selected a "proven parent" design as the basis for the NLT design that meets the criteria listed below.</p>				
NLT-402	The NLT shall be developed from a parent design currently in satisfactory operation for a minimum of 1,000 cumulative operating hours.			
<p>b. Evaluated NLT System Requirements The Bidder must supply objective evidence with the proposal to demonstrate how each of the requirements listed below will be met by the Proven Parent design proposed by the Bidder. The Bidder must include cross-references to supporting/background documentation submitted with the proposal to demonstrate how the requirement will be met by the proposed tug design. OR The Bidder must supply objective evidence with the proposal to demonstrate how the Proven Parent design will be modified by the Bidder to meet the requirements listed below. The Bidder must include cross-references to supporting/background documentation submitted with the proposal to demonstrate how the requirement will be met by the proposed tug design.</p>				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP -420	The NLTs shall be designed to meet the requirements of MARPOL 73/78, and shall be designed for operation within the limit of Canada Shipping Act, Near Coastal Voyage Class 2.				
NLTP -437	<p>The Current Canadian Fleet that the NLTP will be required to support consists of the HALIFAX Class Frigates (5000 tonnes Displacement), VICTORIA Class Submarines (2,455 tonnes Displacement) and KINGSTON Class MCDVs (910 tonnes Displacement).</p> <p>The future fleet will consist of these existing three Classes of vessel with the addition of the Arctic Offshore Patrol Ships (AOPS), the Canadian Surface Combatant (CSC), the interim Auxiliary Oiler Replenishment (iAOR) and the Joint Support Ship (JSS).</p> <p>The largest of these will be the iAOR with the following notional particulars:</p> <ul style="list-style-type: none"> - 183m length overall with 26,000 tonne displacement. - Estimated wind area above design waterline 3,100m2, and - Estimated underwater area below design waterline 1,760m2." 		For information purposes in support of requirements NLTP-448 and NLTP-1974.		

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation																																
NLTP -438	<p>To enable cold moves with the fewest number of tugs the NLT's will work in concert with existing smaller tugs which will provide additional push/pull and orientation control along a second axis. The minimum number of large and smaller tugs that are required to move the existing ships, and are anticipated to be required for the future fleet are detailed in Table 1.</p> <p>Table 1</p> <p>Cold Move Minimum Tug Requirements</p> <table border="1" data-bbox="857 1247 1263 1732"> <thead> <tr> <th>Class</th> <th>Large Tugs</th> <th>Small Tugs</th> <th>Total Tugs</th> </tr> </thead> <tbody> <tr> <td>Halifax FFH</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>Victoria SSK</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>Kingston MCDV</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>JSS</td> <td>2</td> <td>0</td> <td>2</td> </tr> <tr> <td>iAOR</td> <td>2</td> <td>0</td> <td>2</td> </tr> <tr> <td>AOPS</td> <td>1</td> <td>1</td> <td>2</td> </tr> <tr> <td>CSC</td> <td>1</td> <td>1</td> <td>2</td> </tr> </tbody> </table>	Class	Large Tugs	Small Tugs	Total Tugs	Halifax FFH	1	1	2	Victoria SSK	1	1	2	Kingston MCDV	1	0	1	JSS	2	0	2	iAOR	2	0	2	AOPS	1	1	2	CSC	1	1	2		<p>For information purposes in support of requirements NLTP-448, and NLTP-1974.</p>	<p>Demonstrated Compliance Yes / No</p>
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AOPS	1	1	2																																	
CSC	1	1	2																																	
NLTP -445	<p>The NLT's full load draught shall not exceed 6m.</p>																																			

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP -448	In the tug configurations specified in Table 1, the NLT shall be able to cold move the ships of the current and future naval fleets, in the confines of the Halifax and Esquimalt harbours, in sustained winds of 25 knots from any direction and in currents of up to 2 knots in any direction.				
NLTP - 1974	The Bollard Pull of the NLT's shall be suitable to meet operational requirements to cold move the iAOR as defined in NLTP-437 and NLTP-438 with two NLTs.				
NLTP -450	Notwithstanding the power required to cold move the stated vessels, in the defined environmental conditions, the minimum Bollard Pull for the NLT must be at least 40 tonnes.				
NLTP -451	The NLT shall have seamless, uninterrupted, and consistent thrust when changing the thrust vector through a full 360 degrees;				
NLTP -460	The NLT shall achieve a minimum free-running speed of 12 knots at 80% Maximum Unrestricted Continuous Rating (MCR), fully loaded in calm water;				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP -463	The NLT shall have a Range of not less than 2400 nautical miles (NM) at a transit speed of 10 knots for propulsion engines, generators, and the corresponding equipment for ship's operation in Sea State 2 at 0°C ambient air temperature with the fuel capacity determined from the difference between 95% Full Departure and 10% Full Arrival conditions.				
NLTP -464	The NLT shall be capable of Conducting out-of-harbour coastal towing of MCDVs to a distance of up to 750 nautical miles from home port and return in Sea State 3 for a total range of 1500 nm (towing for up to 50% of the distance) with no more tugs than shown in Table 1.				
NLTP -467	The NLT shall be able to transfer a minimum of 20 tonnes of potable water, from its own storage tanks, to the DRDC research barge (YR494) and ships/vessels within close proximity of Esquimalt or Halifax harbours per visit.				
NLTP -474	Full Complement; - Full Complement is defined as not less than (6) persons, mixed gender.	For information purposes in support of requirement NLTP-465, NLTP-475, NLTP-1526, NLTP-1542 and NLTP 1545			

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
NLTP -465	The NLT shall have a provisions and stores endurance to sustain operations for (10) days with a full complement.				
NLTP -475	As a minimum, the NLT shall accommodate the following compartments and lockers: - Bridge; - First-aid station furnished with a first-aid kit; - Pyrotechnics locker; - Flag lockers; - Deck Stores; - Wet Gear/ Drying Locker; - Garbage Store; - HAZMAT locker; - Locker for Spill Control and Disposal Kits; - Firefighting Equipment Storeroom; - Firefighting Gear Lockers; - Galley (co-located to Mess); - Mess/Recreation Area to seat (6) crew				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
	in (1) sitting; - Cabins for (6) crew (as per Canadian Towboat Regulations) with no less than 2 single cabins and accommodation for mixed gender; - Washplaces (2); - Laundry area; - Fore peak; - Chain Locker; - Chain and Rope Storage; - Provisions Store; - Linen Locker; - Cleaning Gear Lockers; - Propeller Compartment; - Engine Room; - Generator Compartment; - Spares Parts Store; and - Workshop Area.				
NLTP -489	The NLT shall have two (2) Medium Speed Diesel Engine Prime Movers.				
NLTP -490	The NLT shall have twin propulsion units that are each capable of providing 360				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
	degrees of vectored thrust.				
NLTP-499	The NLT shall be designed with electrical power supplied by two identical, independent, diesel driven, three phase, 60 Hz, 600V AC ship's service generating sets.				
NLTP -508	The NLTs shall be fitted with a firefighting outfit of fire pumps, fire monitors, foam and water tanks, and other required equipment which conforms to the FiFi I or equivalent notation.				
NLTP -509	In addition to the equipment and design requirements of the FiFi I classification, these NLTs shall also be capable of discharging foam from their two fire monitors at the rates and capacities defined by the Regulatory Body for FiFi III class. The sole difference with respect to this Foam Monitor System shall be that only two monitors will be fitted in total and these two monitors will be capable of discharging either sea water or foam.				
NLTP -518	The NLT shall be fitted with a SOLAS approved Rescue Craft and a				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
	launching/recovering system.				
NLTP -561	The propulsion system shall be controllable and monitored through a microprocessor-based Integrated Platform Management System (IPMS).				
NLTP - 2170	The propulsors shall be suitable for tug boat operations and have proven performance in tug boats currently in operation.				
NLTP - 1445	The crane shall be electro-hydraulically operated, be able to reach the main working deck, and have sufficient reach to: <ul style="list-style-type: none"> - deploy fuel spill response equipment over the gunwales, - enable the NLT to pick up and release temporary naval buoy moorings of up to 1 tonne, - be capable of loading and off-loading light cargo when the NLT is alongside dock, and - launch and recover the NLT's Rescue Boat. 				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP - 1446	The crane controls shall be fitted in a position such that the operator can clearly view the rescue boat at all times during the launch and recovery.				
NLTP - 1470	All deck machinery shall be powered by one type of power source.				
NLTP - 1471	All hawser/towing winches shall be self tensioning and capable of holding enough synthetic line and /or wire rope for the size of tug.				
NLTP - 2089	All hawser/towing winches shall operate at the NLT's maximum rated bollard pull.				
NLTP - 1477	An encapsulated staple, configured for use with the winches provided shall be fitted on the forward and aft working decks.				
NLTP - 1478	The hawser winch, staple and fairleads shall be situated to allow the hawser to be deployed forward or aft at the centre line and to each side of the NLT.				
NLTP - 1479	The foredeck shall have a Hawser winch with self-tensioning control capable of holding 76 metres of synthetic line rated for the NLT's maximum rated bollard pull				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP - 1482	with a minimum safety factor of six. The aft deck shall have a Hawser winch with self-tensioning control capable of holding 183 metres of synthetic line capable of operating at the NLTs maximum rated bollard pull with a minimum safety factor of six in the indirect towing mode.				
NLTP - 1483	The Hawser winch will have a secondary drum capable of holding 76 metres of synthetic line capable of operating at the NLTs maximum rated bollard pull with a safety factor of 6.				
NLTP - 1497	The deck adjacent to the launching/recovering system for the Rescue Boat shall have sufficient area available for embarking and disembarking personnel, transferring stores and conducting boat troubleshooting.				
NLTP - 1526	The total capacity of the black water tanks and the grey water tanks shall be sufficient to accommodate 72 hours of continuous operation without discharge plus 20%.				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
NLTP - 1542	The NLT shall have a garbage store for containers/bins to collect sorted garbage, recyclable material and regular waste.				
NLTP - 1545	With all accommodation occupied the NLT shall be able to process and store the amount of solid waste as indicated in the table below for the maximum number of days of endurance plus 20%. Waste Stream Food and Galley Waste Volume/Person/Day Weight/Person/Day (m3) (kg/person/day) 0.00085 0.5488 Cardboard and Paper Volume/Person/Day Weight/Person/Day (m3) (kg/person/day) 0.0014 0.5035 Metal and Glass				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
	Volume/Person/Day (m3) 0.0014 Weight/Person/day 0.2449 Plastic Volume/Person/Day (m3) 0.00043 Weight/Person/day 0.0907				
NLTP - 1618	To accommodate the movement of warships and submarines the fendering system shall extend 360° around the hull.				
NLTP - 1694	The Bridge shall be enclosed with windows around its full perimeter to provide 360 degree visibility.				
NLTP - 1700	Sky ports shall be fitted to provide visibility above the NLT.				
NLTP - 1840	The Bridge shall be outfitted with navigational aids, communications and electronic equipment and the following: - Chart table with a top at least 750 mm long x 750 mm wide, 915 mm above floor and fitted with drawers and				

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation
	<ul style="list-style-type: none"> lockers underneath; - Chart table lamp; - Flag locker; - Bookshelf; at least one linear metre long and 300mm deep; - Bridge Control Console (BCC) to suit installation of steering, navigation, and communication equipment and controls; - Machinery Control Console(MCC) to suit installation of alarm, machinery controls and indicators, and auxiliary machinery monitors and controls; - Firefighting (FiFi) Control Console (FCC); - Two Captains chairs with sliding base for sitting or standing, (1) in way of Master's position and (1) in way of Engineer's position; - Clock and barometer; - Clinometer; - Magnetic compass located centreline; - Medical cabinet, including first aid kit; and - Stowage spaces for shapes. 			<p style="text-align: center;">Demonstrated Compliance Yes / No</p>

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SRD Reference Number	Description of Requirement	Submitted Reference with page and paragraph number	Comments / Remarks	Canada's Evaluation
	binocular boxes adjacent to helm position, lead lines.			Demonstrated Compliance Yes / No

Table 2 - Technical Bid Evaluation Matrix

Description of Mandatory Requirement Technical Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation
a. The Bidder must provide, with their bid package, a Technical Compliance Letter of Acknowledgement for Design and Construction of Naval Large Tugs signed by the Bidder's representative.				
Technical Compliance Letter of Acknowledgement in accordance with Appendix C of this Annex.				Demonstrated Compliance Yes / No
b. Parent Vessel Information				
The Bidder must provide, with their bid package, technical information describing their "Proven Parent" vessel. As a minimum, the following technical information with reference to the "Proven Parent" vessel must be submitted at time of bidding;				
1) "Proven Parent" vessel as-built specification;				

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Description of Mandatory Requirement Technical Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
2) "Proven Parent" vessel general arrangement; 3) "Proven Parent" vessel trim and stability manual; 4) "Proven Parent" vessel trial report containing a minimum of speed and power curve; 5) Candidate vessel major structural construction plans; 6) Fuel Consumption and endurance calculations; 7) Tank Plan and Capacities; 8) Contact info for the owner of the "Proven Parent" vessel. Canada will be granted the right to, but not be obligated, contact the owner. In this instance the "Proven Parent" vessel is defined as a design of a vessel that is currently in satisfactory operation with a minimum of 1,000 operating hours logged. The "Proven Parent" design shall be operating successfully, or shall have operated successfully, in a coastal maritime environment. The "Proven Parent" design shall meet the System Requirements Document (SRD) or require only minor modifications to meet the SRD. The hydrodynamic and maneuvering characteristics of the "Proven Parent" design must be known and documented and capable of being demonstrated by sea trials.					
As-built vessel specification					
General Arrangement					
Trim and Stability Manual					
Trial Report					
Speed / Power Curve					
Vessel Major Structural Plans					

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Description of Mandatory Requirement Technical Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Fuel Consumption and Endurance Calculations					
Tank Plan and Capacities					
Contact information for owner of the "Proven Parent" vessel					
<p>c. Boat Construction Experience, Part 3, Article 3.1.1.1</p> <p>The Bidder shall provide objective evidence that it has a proven capability in the construction of boats of similar complexity to the subject of this RFP, by providing an example of such a boat it has built within the last ten (10) years.</p> <p>For the purpose of this evaluation, the term <i>similar complexity</i> is defined in terms of a vessel that has been constructed with all the following systems;</p> <ul style="list-style-type: none"> a. 3 phase electrical distribution system; b. black water and grey water systems; and c. a minimum of 400kW installed propulsion power. <p>If the Bidder is a joint venture, the requirement for Boat Construction Experience must be met by the member of the joint venture who will construct the "Work" as detailed in the Systems Requirements Document attached within Annex "A" of the RFP.</p> <p>Description of the Bidder's boat construction experience shall include details sufficient to evaluate the described experience with reference to the following elements:</p>					

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Description of Mandatory Requirement Technical Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
a. Contract Data – Indicate when the contract was awarded and the client name; b. Vessel Type – Describe the details of the type of ship with sufficient information to demonstrate the vessel is of similar complexity; and c. Documentation – Include a hard copy of the general arrangement plan for the vessel; the drawing shall be legible and shall be provided on a minimum A3 (11 inch x 17 inch) standard size sheet.					
Contract Data: Date of contract award Client Name					
Vessel Type with sufficient information to demonstrate the vessel is of similar complexity					
General Arrangement Plan					

Appendix B - Mandatory Requirements - Management Bid (Section II)

Table 3 - Management Bid Evaluation Matrix - Project Management Plan

Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
<p>Project Management Plan (DID M-001)</p> <p>The purpose of this DID is to define how the Contractor will manage the design and construction of the Naval Large Tugs.</p> <p>The Bidder must deliver, at time of bidding, information that details the Bidder's management approach and the processes to be used to address each requirement of the design, construction, outfit, test, trial, certification, and delivery to Canada of the Naval Large Tugs with respect to the following elements which form part of the Project Management Plan (DID M-001).</p>					
<p>a. An overview of the Bidder's organization that will be involved in the work. Bidders must include a description to show the reporting relationships, responsibilities, authorities and lines of communication and project control. Résumés of the Bidders Project Manager and Technical Lead must be included.</p>					
Contractor's Organization Overview					
Reporting Relationships/Responsibilities					
Authorities					
Lines of Communication					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Project Control					
Project Team Résumés: Project Manager Technical Lead					
<p>b. An overview of the Bidder's Human Resources plan and strategy to illustrate how the Bidder will obtain HR capacity with the right education, experience and qualifications to successfully manage and complete the work, specifically as it relates to administration, design and engineering, material procurement, construction, quality management, and test and trials personnel and resources.</p>					
Human Resources Plan illustrating how the Bidder will obtain HR capacity					
Human Resources Plan as it relates to administration, design and engineering, material procurement, construction, quality management, and test and trials					
<p>c. A Communication plan which describes the communications workflow, details of information distribution and performance reporting, identifies team members responsible for various elements of correspondence and reporting including monitoring and controlling, and identifies what</p>					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
information is reported, the method and frequency of communications and reporting submissions that the Bidder will employ if the Bidder is awarded a Contract as a result of this Solicitation.					
Communications Workflow					
Details of information distribution and performance reporting					
Identification of team members responsible for various elements of correspondence and reporting including monitoring and controlling					
Identifies information to be reported					
The method and frequency of communications and reporting submissions					
<p>d. A description of the Bidder's design, engineering and drafting capabilities that will be used for the project including resumes of key personnel such as the Chief Draftsperson, Naval Architect and engineering discipline managers.</p> <p>The Bidder must provide objective evidence that it has either in-house capabilities, or has a written commitment for the duration of the Contract from a supplier to provide marine drafting and engineering services. The supplier must have the experience and capabilities with respect to the design and construction of vessels of similar complexity.</p> <p>The Bidder must describe in detail how it meets this criterion above. In the case of a supplier providing the capabilities, the Bidder must supply the written commitment of the supplier, signed by the supplier on supplier letterhead, confirming that the supplier will provide the services for the</p>					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
<p>duration of any Contract that may be awarded pursuant to this RFP, and describing in detail how the supplier meets the marine drafting and experience criterion above.</p> <p>For the purpose of this evaluation, the term <i>similar complexity</i> is defined in terms of a vessel that has been constructed with all the following systems:</p> <ul style="list-style-type: none"> a. 3 phase electrical distribution system; b. black water and grey water systems; and c. a minimum of 400kW installed propulsion power. 					
Description of Design, Engineering and Drafting Capabilities					
Project Team Résumés Chief Draftsperson Naval Architect Engineering discipline managers					
Evidence of in-house capabilities or written commitment for the duration of the Contract from a supplier to provide marine drafting and engineering services signed by the supplier on supplier letterhead.					
Description of how the supplier					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
meets the marine drafting and experience requirements described above for vessels of similar size, type and complexity.					
e. A description of the Bidder's Logistics Support capability and system by which the Bidder intends to conduct activities related to the calculation, storage, handling and packaging of spares, the development, configuration control, storage and transmission of publications, drawings and translation.					
Description of Logistics Support Capabilities					
f. A description of the procedures and operations of the Bidder's management information system that includes the communication plan, the procedures and operation of data management and configuration management in effect at the Bidder's facility that will be employed to support the project. The description must include details of the computer system, office software, engineering software, document tracking and records management procedures utilized at the Bidder's facilities.					
Description of the procedures and operations of the management information system.					
Procures and operations of data management and configuration management.					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Computer systems Office software Engineering Software					
Document tracking and records management procedures.					
g. A description of the Bidder's planning, scheduling and production control that the Bidder's will employ at their facility, if the Bidder is awarded a Contract as a result of this Solicitation.					
Planning, scheduling and production control systems.					
h. Details of the Bidder's infrastructure including facilities and equipment, building berth / drydock, outfitting quays, cranes, workshops and assembly areas for construction and outfitting, office space, IT tools and software the Bidder will utilize to complete the work, if the Bidder is awarded a Contract as a result of this Solicitation.					
Details of infrastructure including facilities and equipment.					
Building berth / drydock					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Outfitting quays					
Cranes					
Workshops and assembly areas for construction and outfitting.					
Office space					
IT software and tools					
i. As part of the PMP Bidder's must provide, at time of bidding, the details of the requirements management strategy defining the Bidder's methodology for managing project requirements that will be employed if the Bidder is awarded a Contract as a result of this Solicitation.					
Requirements management strategy					

Table 4 - Management Bid Evaluation Matrix - Master Plan and Schedule

Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
<p>Master Plan and Schedule (DID M-002)</p> <p>The purpose of this DID is to define how the Contractor will schedule the work associated with the design, construction and delivery of the Naval Large Tugs.</p> <p>The Bidder must describe, at time of bidding, how they will schedule the work associated with the design, construction and delivery of the Naval Large Tugs by providing information with respect to the following elements which form part of the Master Plan and Schedule (DID M-002).</p>					
<p>a. The Master Plan and Schedule must be prepared in MS Project, presented as a Gantt chart with dependencies included.</p>					
Project Schedule Gantt Chart with dependencies included					
<p>b. The Master Plan and Schedule must identify all activities of the contract in accordance with a recognized Work Breakdown Structure to 2 levels with a critical path including details of any activities that affect the Critical Path and impact successor activities. The Bidder schedule must include estimated start and completion dates based on an assumed Contract Award date.</p>					
Work Breakdown Structure with Critical Path					
<p>c. The Bidder's Master Plan and Schedule, at time of bidding, must include all anticipated major milestones and key events such as the Preliminary and Critical Design Review, Factory Acceptance Tests, Dock and Sea Trials and Vessel Delivery.</p>					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Major milestones and key events					



Table 5 - Management Bid Evaluation Matrix - Quality Plan

Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation
				Demonstrated Compliance Yes / No
<p>Quality Plans (DID M-003)</p> <p>The purpose of this DID is to define how the Contractor will control the Quality of the various major work processes and where there must be opportune points to witness key Quality Program process points on either an occasional or continuing bases as part of the Quality Program verification activities.</p> <p>The Bidder, at time of bidding, must identify and describe the associated processes it will use to manage, monitor and control the Quality of the various major work processes associated with the design, construction and delivery of the NLTs. As part of the overall Quality Plans, the Bidder, at time of bidding, must identify when key verification activities should be conducted and the frequency of these verification activities.</p> <p>The Bidder must, at time of bidding, provide information with respect to the quality control elements below which form part of the Quality Plans (DID M-003).</p>				
<p>a. The Quality Plan must be prepared in accordance with the current version of ISO 10005 Quality Management - Guidelines for Quality Plans, and describe, depict and define the Quality Program inspection and test activities.</p> <p>The Quality Plan must address, but not be limited to, the following quality control elements;</p> <ul style="list-style-type: none"> • Management Representative • Quality Assurance Manual • Quality Reporting Organization • Documentation • Procurement • In-Process Inspection • Final Inspection • Special Processes • Quality Records • Non Conformance • Corrective Action 				

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Quality Plan prepared in accordance with ISO 10005					
The Quality Plan describes, depicts and defines the Quality Program inspection and test activities.					
The Quality Plan addresses the following quality control elements: Management Representative Quality Assurance Manual Quality Reporting Organization Documentation Equipment Procurement In-Process Inspection Final Inspection Special Processes Quality Records Non Conformance Corrective Action					

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation
				Demonstrated Compliance Yes / No
<p>b. A Quality Plan for each of the following major work processes must be detailed to ensure product conformity with the System Requirements Document:</p> <ul style="list-style-type: none"> a. Initial steel preparation, cutting and forming; b. Pre-construction fabrication of hull components; c. Module construction, outfitting and final preparation; d. Hull assembly and fitting; e. Major equipment acceptance inspections and tests; f. Major equipment installation; and g. Installed equipment inspections and tests. 				
The Quality Plan describes the Major work processes listed above.				
<p>c. The Quality Plans must describe how the Bidder will conform to the specified quality requirements of the Contract and specify how the required quality activities are to be carried out including quality assurance of subcontractors</p>				
The Quality Plan describes how the Contractor will conform to the specified quality requirements.				
The Quality Plan specifies how the				

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Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
required quality activities are to be carried out including quality assurance of subcontractors.					

Table 6 - Management Bid Evaluation Matrix - Other Requirements

Description of Mandatory Requirement Management Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
a. Subcontractors List, Part 3, Article 3.1.2.1					
A list in the form of the attached Annex "C" of the RFP, of subcontractors for labour and / or material must be included with the Bidder's Proposal, stating the name and address of each subcontractor, and a description (Make, Model No.) of the goods or services to be supplied by each.					
Subcontractors List in accordance with Annex "C" of the RFP					
b. Contractor Quality Management System, Part 3, Article 3.1.2.2					
The Bidder shall also provide a minimum of one (1) sample of completed quality records used by the Bidder on the most recent marine Boat construction at its facility.					
One (1) sample of completed quality records used by the Bidder on the most recent marine Boat construction at its facility.					

Appendix C - Technical Compliance Matrix letter of Acknowledgement for Design and Construction of Naval Large Tugs - Technical Bid (Section I)

TECHNICAL COMPLIANCE MATRIX

Letter of Acknowledgement

For

Design and Construction of Naval Large Tugs

1. The Technical Compliance Matrix, which is directly derived from the Systems Requirements Document, Annex A of the RFP, lists all the Mandatory Requirements for evaluation purposes. Technical Mandatory Requirements will be evaluated on a simple compliant/ non-compliant basis.
2. The Technical Compliance Matrix must be completed by each Bidder and be attached to and form part of the proposal. Bidders must ensure that the necessary documents (drawings, specification and supporting evidences) to demonstrate how each requirement is met by the proposed Parent design shall be included in the Proposal. The Technical Compliance Matrix must be completed to indicate where the supporting information for each Mandatory Requirement is located in the Bid Proposal.
3. Canada will review all technical documentation supplied by the Bidder with their proposal to ensure that there are no contradictions or discrepancies between the documentation and the Technical Compliance Matrix.
4. To be considered technically responsive, the Bidder's Proposal must meet all the criteria specified in the Technical Compliance Matrix.
5. The bidder must sign the following to acknowledge that the Technical Compliance Matrix only listed those items for evaluation purposes and the Bidder shall design and construct the vessels to meet all the mandatory requirements in accordance with the RFP, SOW and SRD.

I, _____ (Bidder's Representative) on behalf of _____ (Bidder) acknowledge the Technical Compliance Matrix attached to the Request for Proposal (RFP) that I completed is for Technical Evaluation Purposes only. In addition to and including the Mandatory Items listed in the "TECHNICAL COMPLIANCE MATRIX" for which I acknowledge I will be rated on a compliant / non-compliant basis, I acknowledge understanding of, and compliance to all mandatory requirements listed in the Statement of Work and the Systems Requirements Document, listed as Annex A in the RFP Solicitation Document # _____

(Signature – Bidder's Representative)

Appendix D - Mandatory Requirements - Financial Bid (Section III)

Table 7 – Financial Bid Evaluation Matrix

The Financial Bid must not be attached to or combined within any other part of the bid and prices must not appear in any other area of the proposal except the Financial Bid.

Description of Mandatory Requirement Financial Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
a. The Bidder must submit their Financial Bid in accordance with Part 3, Article 3.1.3 Section III: Financial Bid and complete Annex B, Basis of Payment.					
Annex B completed and included per instructions.					

Appendix E - Mandatory Requirements - Certification Bid (Section IV)

Table 8 – Certification Bid Evaluation Matrix

Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
Bidders must submit the certifications as required under Part 5 of the RFP, including; <ol style="list-style-type: none"> Integrity Provisions - Declaration of Convicted Offences; Integrity Provisions – Required Documentation; Federal Contractors Program for Employment Equity - Bid Certification; Workers Compensation Certification – Letter of Good Standing; Certification of Welding; and Labour Agreement. 					
a. Integrity Provisions - Declaration of Convicted Offences as per Part 5, Article 5.1.1. In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, if applicable, the Integrity declaration form available on the Forms for the Integrity Regime website (http://www.ipsgc-pwgsc.gc.ca/ci-if/declaration-eng.html), to be given further consideration in the procurement process.					
Integrity Declaration					
b. Integrity Provisions – Required Documentation as per Part 5, Article 5.2.1. In accordance with the section titled information to be provided when bidding, contracting or entering into a real procurement agreement of the Ineligibility and Suspension Policy (http://www.ipsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.					
Documentation related to Integrity provisions included					
c. Federal Contractors Program for Employment Equity - Bid Certification as per Part 5, Article 5.2.2. The Bidder must provide the Contracting Authority with a completed annex titled <u>Federal Contractors Program for Employment Equity -</u>					

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Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
<p><u>Certification</u>, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.</p>					
<u>Federal Contractors Program for Employment Equity – Certification.</u>					
Joint Venture - Completed annex titled <u>Federal Contractors Program for Employment Equity – Certification.</u>					
<p>d. Workers Compensation Certification – Letter of Good Standing as per Part 5, Article 5.2.3.</p>					
<p>The Bidder must have an account in good standing with the applicable provincial or territorial Workers' Compensation Board.</p>					
<p>The Bidder must provide, within five (5) calendar days following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.</p>					
Certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account.					

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Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation Demonstrated Compliance Yes / No
<p>e. Certification of Welding as per Part 5, Article 5.2.4.</p> <p>It is a requirement of this RFP that the Bidders must provide evidence of certification in for the current year for their shipyard with their bids and agree to maintain certification, until completion of the project, by the Canadian Welding Bureau (CWB) to CSA Standard W47.1: "Certification of Companies for Fusion Welding of Steel".</p> <p>The Bidder hereby attaches the following applicable information with the bid:</p> <ul style="list-style-type: none"> (a) Proof of certification to CSA Standard W47.1 for the current year; and (b) Proof of CWB currently approved welding procedure specifications and supporting welding data sheets to construct the boat to project welding requirements; and (c) Proof of employed or sub-contracted inspection personnel are currently certified to CSA Standard W47.4 and W59; and (d) Proof of employed welders currently certified to CSA Standard W47.1; and (e) Proof of employed welding supervisors currently certified to CSA Standard W47.1 and W59; or (f) Proof of capability to obtain as and when required personnel currently certified / approved to the standards identified in (c) and (d) and (e) above. <p>Evidence of certification in for the current year for their shipyard with their bids and agree to maintain certification, until completion of the project.</p>				

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Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
					Demonstrated Compliance Yes / No
Proof of certification to CSA Standard W47.1 for the current year					
Proof of CWB currently approved welding procedure specifications and supporting welding data sheets to construct the boat to project welding requirements.					
Proof of employed or sub-contracted inspection personnel are currently certified to CSA Standard W47.4 and W59.					
Proof of employed welders currently certified to CSA Standard W47.1.					
Proof of employed welding supervisors currently certified to CSA Standard W47.1 and W59.					

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Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
Proof of capability to obtain as and when required personnel currently certified / approved to the standards identified in (c) and (d) and (e) above.					
f. Labour Agreement as per Part 5, Article 5.2.5.					
Where the Bidder has a labour agreement, or other suitable instrument, in place with its unionized labour, and where such labour agreement or instrument is scheduled to expire during the period of the Contract, the Bidder represents that negotiations and good faith bargaining have commenced at least six (6) months in advance of the labour agreement expiry. The Bidder further represents and warrants that it will take all appropriate actions to ensure a continuous valid labour agreement, with all its workers, for the duration of the Contract.					
The Bidder hereby provides the following documentation as part of its bid:					
a) List of all labour unions at Bidder's facilities; and					
b) List the number of labour agreements in force with these unions and provide copies of all labour agreements in force; or					
c) Statement that there are no labour unions at the bidder's facility.					
List of all labour unions at Bidder's facilities					
List the number of labour agreements in force with these unions and provide copies of					

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Description of Mandatory Requirement Certification Bid	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance	Yes / No
all labour agreements in force					
Statement that there are no labour unions at the bidder's facility.					

Appendix F- Mandatory Requirements – Security, Financial and Other Requirements

Table 9 – Security, Financial and Other Requirements

Description of Mandatory Requirement Security, Financial and other Requirements	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation	
				Demonstrated Compliance Yes / No	
<p>a. Insurance Requirements as per Part 6, Article 6.3 of the RFP</p> <p>The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex "E".</p> <p>If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.</p>					
Letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex "E".					
<p>b. Security for Performance per Part 6, Article 6.4 of the RFP</p> <p>The Bidder must provide a letter, issued by an approved surety or financial institution on its letterhead as per 6.4 Security for Performance of the RFP.</p> <p>6.4 The Bidder shall provide evidence with its Proposal that it can provide Contract Financial Security as outlined in Annex "H" Part 1. Such</p>					

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Description of Mandatory Requirement Security, Financial and other Requirements	Submitted Reference with page and paragraph number	Compliant with supporting documentation	Comments / Remarks	Canada's Evaluation
evidence must take the form of a letter to be obtained at the sole expense of the Bidder, issued by an approved surety or financial Institution on its letterhead to the Minister of Public Works and Government Services and signed by an authorized representative, confirming unequivocally that, upon the Contract being awarded to the Bidder, the surety or financial institution will, upon request, provide the Bidder with a form of Contract Financial Security as outlined above, and setting out, at a minimum, the amount of any such security, the cost of such security, and the time period during which it is to be extended. Failure to provide this evidence by the Bidder will result in disqualification of its Proposal. The cost to the Bidder of the Contract Financial Security is to be indicated in Annex "B" Line Item Pricing. No mark-up or other fees are permitted to be added to the cost of the Contract Financial Security.				Demonstrated Compliance Yes / No
Evidence that the Bidder can provide Contract Financial Security				