



RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
See herein

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Marine Emergency Response Division/Division des
Interventions en cas d'urgence maritime
Centennial Towers 7th Floor - 7W11
200 Kent Street
Ottawa
Ontario
K1A0S5

Title - Sujet EREP: Ice Skimmer Package EREP: Large Offshore Ice Skimmer Package	
Solicitation No. - N° de l'invitation F7047-190147/A	Amendment No. - N° modif. 010
Client Reference No. - N° de référence du client F7047-190147	Date 2021-03-12
GETS Reference No. - N° de référence de SEAG PW-\$ERD-005-28045	
File No. - N° de dossier 005erd.F7047-190147	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Daylight Saving Time EDT on - le 2021-03-30 Heure Avancée de l'Est HAE	
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: Richards, Shazia	Buyer Id - Id de l'acheteur 005erd
Telephone No. - N° de téléphone (343) 553-2046 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	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

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F7047-190147

Amd. No. - N° de la modif.
010
File No. - N° du dossier

Buyer ID - Id de l'acheteur
005erd
CCC No./N° CCC - FMS No./N° VME

Amendment 010

This amendment is raised to publish questions and answers as well as to modify the Statement of Work (SOW) and the Technical Statement of Requirements (TSOR) - *see attached modified SOW and TSOR documents.*

1. Publish questions and answers and modify the SOW and TSOR documents

Question 49: *TSOR B3.9 - All oil recovery performance data must be collected in accordance with the general procedure defined in ASTM F631-15, Standard Guide for Collecting Skimming Performance Data in Controlled Environments; or the test protocol defined in ASTM F2709-15, Standard Test Method for Determining a Measured Nameplate Recovery Rate of Stationary Oil Skimmers.*

We have completed testing on the proposed skimmer, however it was not completed to the above noted standards, but was witnessed by a third party. We have reviewed the procedures used and they are in line with the ASTM requirements, however, we do not have certification of the results to the ASTM Standards. Would it be acceptable, if successful, that these tests could be confirmed during the First Article Tests, to the ASTM requirements, with a 3rd party witness?

Response 49: As per TSOR requirement B.3.9, oil recovery performance tests must follow the protocol defined in ASTM F 631-15 or ASTM F2709-15, however it is not required that the skimmer be certified to these specific standards. Other tests will be acceptable, as long as their procedures were in line with the tests mentioned in the TSOR.

Question 50: Will CCG accept the test results for Brush Wheel Technology that was tested in a different skimmer body?

Response 50: Yes, CCG will accept test results for the same Brush Wheel Technology used in a different skimmer than the one proposed, provided that the technology is unchanged from the test and the test results indicate the technology meets the requirements of the TSOR.

Question 51: TSOR B7.1 Storage Containers – Regarding the Umbilical Hose, in order to accommodate the requested length and capacity, it will be impossible to fit 70m of the umbilical hose on a reel inside of a 10ft container. We would like to propose supplying the umbilical hose and reel on its own standalone 10'ft container base with the integrated reel.

Response 51: After carefully reviewing the information provided, the requirements have been changed. CCG now requires separate hydraulic, oil transfer and steam hoses without an umbilical hose and the requirement for a hydraulically powered reel has been changed to a manual reel. The storage container requirements remain unchanged.

TSOR Amendments:

Delete: B.1.5 - The Ice Skimmer Package must include any accessories or features that are necessary to deploy the skimmer head and umbilical from the side of a vessel or dock with the use of a single overhead crane, without causing any damage to the components of the Ice Skimmer Package and without resulting in any chaffing or kinking of the umbilical hoses.

Insert: B.1.5 - The Ice Skimmer Package must include any accessories or features that are necessary to deploy the skimmer head from the side of a vessel or dock with the use of a single overhead crane, without causing any damage to the components of the Ice Skimmer Package and without resulting in any chaffing or kinking of the hoses.

Delete: B.5.4 - All hose assemblies that connect to the Ice Skimmer head must be integrated together into a sealed umbilical hose.

Insert: B.5.4 - All hoses must be provided in detachable segments of 20 to 25 m. This is to allow the skimmer to be deployed with a length of hose shorter than the 70 m required in B.5.1 and B.5.2.

Delete: B.5.5 - The umbilical hose must be self-floating and capable of maintaining buoyancy during skimmer head deployment, including when the oil transfer hoses are full.

Insert: B.5.5 - Enough Hose floats must be provided with the Ice Skimmer package to allow for all the hoses to remain buoyant even when filled.

Delete: B.5.6 - Hoses of at least 10 m in length must be provided for all connections between the HPU, the steam generator, the hose reel and the umbilical to allow for positioning of the units on a ship deck.

Delete: B.6.1 – One hydraulically powered reel must be supplied to hold, deploy and recover the umbilical hose during operation and storage. The reel must allow for the skimmer to operate and collect oil while the hose is still on the reel and the hose reel is rotating.

Insert: B.6.1 - A manual reel must be provided as part of the Ice Skimmer Package to hold all hoses. The reel must allow access to each hose type without having to remove other hoses.

Delete: B.6.2 – The hydraulically powered reel must be on a slue (or swivel) gear to allow reel to turn for alignment of the umbilical hose during deployment and recovery operations.

Insert: B.6.2 - The hose reel must have forklift pockets and lifting points that allow for an overhead lift.

Delete: B.6.5 – All hoses, cables and parts necessary to use the hydraulic reel and the steam generator in conjunction with the other components of the Ice Skimmer Package must be supplied.

Insert: B.6.5 - All hoses, cables and parts necessary to use the steam generator in conjunction with the other components of the Ice Skimmer Package must be supplied.

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Buyer ID - Id de l'acheteur
005erd
CCC No./N° CCC - FMS No./N° VME

SOW Amendments:

Delete: The following line from DID-SE-01 - iii. The umbilical hose reel;

Insert: iii. The hose reel;

Delete: The following calculation requirement from DID-SE-01 - iii. The hydraulic circuit to govern the maximum rotational speed of the umbilical hose reel;

Delete: The following line from DID-TM-04 - b. Operation of the skimmer head, the umbilical hose reel and the steam generator;

Insert: b. Operation of the skimmer head and the steam generator;

All other terms and conditions remain unchanged

Annex A

Statement of Work

Environmental Response Equipment Modernization/Mobile Incident Command Equipment Project

Ice Skimmer Package

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SECTION 1 INTRODUCTION

1.1 BACKGROUND

The Canadian Coast Guard (CCG) is the lead federal agency responsible for ensuring the cleanup of all ship source and mystery source pollution spills into waters under Canadian jurisdiction. In fulfillment of this legislated mandate, the CCG maintains a level of operational preparedness capacity to monitor, investigate, and respond, when required, to all reports of marine pollution incidents. The objective of the Environmental Response Equipment Modernization / Mobile Incident Command Equipment (EREM/MICE) Project is to modernize CCG's initial response equipment inventory and supporting infrastructure.

1.2 PURPOSE

The CCG requires high capacity skimming capability to recover spilled oil in offshore, unsheltered and ice covered waters. This Statement of Work (SOW) defines the requirements of the Work and stipulates the deliverables required for the provision of the Ice Skimmer, hereinafter referred to as the "Ice Skimmer Package".

The Ice Skimmer Package will consist of the following **major** components, as described in the accompanying Technical Statement of Requirements (TSOR) – Annex B:

- a. A skimmer head;
- b. A hose reel;
- c. A hydraulic power unit (HPU);
- d. Storage container(s);
- e. A steam generator;
- f. One bilingual hard-copy of the Operations and Maintenance Manual in both of Canada's official languages i.e., English and French; and
- g. One bilingual hard-copy of the Equipment Instructions Illustration.

1.3 SCOPE

All requirements, specifications, and other indications in this SOW regarding the Work required in the provision of the Ice Skimmer Package(s) also pertain to each individual component of the Ice Skimmer Package (as defined in the TSOR), whether they are purchased together as a complete package, as individual items, or in any other combination.

Performance requirements and technical specifications are found in the accompanying TSOR - Annex B.

SECTION 2 PROJECT MANAGEMENT

2.1 GENERAL

The Contractor must identify a Project Manager to oversee all work needed to satisfy the contractual requirements (i.e., tasks, deliverables, resources, schedules, and quality). The Project Manager must be the primary point of contact with Canada.

The Contractor must prepare, deliver, and maintain all project deliverables in accordance with:

- a. Appendix 1: Contract Data Requirement List (CDRL);
- b. Appendix 2: Data Item Descriptions (DIDs); and
- c. Annex B: Technical Statement of Requirements (TSOR).

2.2 PROJECT SCHEDULE

The Contractor must provide a Project Schedule in accordance with **CDRL item DID-PM-01**, for review and acceptance by Canada.

2.3 PROJECT REVIEW AND CONTROL

The Contractor must convene and co-chair all meetings required by this SOW at the Contractor's own facilities, unless otherwise agreed to by Canada or noted herein. All facilities used to convene scheduled meetings must, at a minimum, be suitable for private discussion and comfortably accommodate all meeting attendees. Canada will send a maximum of four (4) attendees for in-person meetings. Teleconference and videoconference may be acceptable at the discretion of Canada.

2.3.1 Meeting Structure and Recording

The Contractor must provide Canada with a Meeting Agenda for each scheduled meeting at least three (3) business days before it is scheduled to occur and a comprehensive Record of Decisions no later than three (3) business days after each meeting (scheduled and unscheduled) has occurred. All Meeting Agendas and Records of Decisions must be reviewed and accepted by Canada.

2.3.2 Contract Kick-off Meeting

Unless otherwise specified, the Contractor must convene and co-chair a two-day Contract Kick-off Meeting no later than 14 calendar days after Contract Award. Unless otherwise specified, the meeting must be held in Canada. At a minimum, the following documents will be reviewed:

- a. Contract (including Annex A and Annex B);
- b. Project Schedule (as per **CDRL item DID-PM-01**);
- c. Concept Design Drawing Package;
- d. Quality Management Systems (as per Section 3.1) of the Contractor and the entity or entities performing the design, manufacturing, and assembly of the Ice Skimmer Package(s); and
- e. Contractor presentation on the facilities that will be used in the manufacturing and assembly of the Ice Skimmer Package(s) (including the facilities of all major subcontractors). The presentation must include pictures, video footage or any other information required to depict all of the equipment and

areas of the facility which will be used in order to provide insight into manufacturing processes and procedures.

To facilitate the review of the documentation and foster discussion, the Contractor must provide one soft copy of the documents identified above (b-d only) as well as the Meeting Agenda in Portable Document Format (PDF), at least three business days prior to the scheduled Contract Kick-off Meeting.

2.3.3 Bi-Weekly Progress Report

The Contractor must provide bi-weekly (occurring once every two weeks) progress reports to Canada via electronic-mail (e-mail) detailing, at a minimum:

- a. Executive summary of events;
- b. Updated Project Schedule, including schedule forecast to date against the baseline with any slippage identified; and
- c. Potential technical adjustments that may be required.

Unless otherwise specified by Canada, the Contractor must submit each bi-weekly progress report by Monday, 9am Eastern Standard Time (EST).

2.3.4 Bi-Weekly Progress Meeting (Teleconference)

The Contractor must participate in bi-weekly (occurring once every two weeks) meetings, scheduled by Canada following receipt of the Progress Report, to review Contract progress. Subcontractors may be required to attend. Unless otherwise specified by Canada, Contract Progress Meetings will occur via teleconference.

2.3.5 Cancellation of Meetings

Canada may cancel meetings at its discretion. Rescheduling of meetings must be done only with the explicit agreement of Canada.

2.3.6 Unscheduled Meetings

The Contractor must provide representation at meetings (teleconference or in person) should there be a need for ad hoc or unscheduled meetings.

2.3.7 Problem Reporting

The Contractor must notify Canada immediately by telephone upon discovering or identifying an issue that may impact the Work. The Contractor must document the issue in writing, within two calendar days of identification, and provide it to Canada via email. Canada will advise whether an unscheduled meeting or any other action is required.

SECTION 3 SYSTEM ENGINEERING MANAGEMENT

3.1 QUALITY ASSURANCE

The Contractor and the entity or entities performing the design, manufacturing, assembly of manufactured components and verification/testing of the Ice Skimmer Package (including all components of the package) must have a Quality Management System (QMS) in place for:

- a. Design and development (required only for the entity or entities performing design and development);
- b. Equipment calibration;
- c. Material certification;
- d. Testing and inspection;
- e. Nonconformity and corrective action; and
- f. Risk mitigation.

The QMS for the above-mentioned categories must include sufficient detail to describe the process. The Contractor and the entity or entities performing the design, manufacturing, assembly and verification/testing must comply with their respective QMS.

3.2 DESIGN REVIEW MEETINGS

3.2.1 Preliminary Design Review Meeting

In preparation for the Preliminary Design Review Meeting, the Contractor must provide the first submission of the Detailed Design Package as per **CDRL item DID-SE-01** for review and comment by Canada. Unless otherwise specified by Canada, the Contractor must convene and co-chair a Preliminary Design Review Meeting to be held via teleconference/videoconference no later than 10 business days after providing the first submission of the Detailed Design.

3.2.2 Critical Design Review Meeting

In preparation for the Critical Design Review Meeting, the Contractor must provide the second submission of the Detailed Design Package as per **CDRL item DID-SE-01** for review and comment by Canada. Unless otherwise specified by Canada, the Contractor must convene and co-chair a Critical Design Review Meeting to be held via teleconference/videoconference no later than 10 business days after providing the second submission of the Detailed Design. If subsequent review meetings are required, they must be held by teleconference/videoconference no later than 5 business days after submitting the most recent revision of the document to Canada.

3.3 TESTING AND CERTIFICATION

Unless otherwise specified by Canada, all testing activities must be conducted at the Contractor's designated facility in the presence of a representative of Canada. The Contractor must notify Canada no less than three weeks prior to conducting any testing in Canada, and no less than three months prior to conducting any testing outside of Canada. Photos, video or live streaming will be required in the event that Canada is not able to attend in person. The format must be reviewed and accepted by Canada.

3.3.1 Test Readiness Review Meeting

Prior to the initiation of Product Verification Testing, the Contractor must convene and co-chair a Test Readiness Meeting which is to be held via teleconference/videoconference, unless otherwise specified by Canada. The purpose of the review is to ensure that the Ice Skimmer Package is ready to proceed into formal tests. The Test Readiness Review assesses test objectives, test methods and procedures, scope of tests, and safety and confirms that required test resources have been properly identified and coordinated to support planned tests.

3.3.2 Product Verification

Prior to the initiation of mass production, the Contractor must:

- a. Perform all required Product Verification identified in the Product Verification Plan (**CDRL item DID-SE-02**) on the first complete Ice Skimmer Package (including all components of the package), demonstrating to Canada that the first Ice Skimmer Package meets all of the technical requirements as defined in the TSOR - Annex B;
- b. Submit a Product Verification Report as per **CDRL item DID-SE-03**; and
- c. Obtain Canada's formal approval of the first complete Ice Skimmer Package and Product Verification Report. **The Product Verification Report must be formally accepted by Canada prior to manufacturing the second and all subsequent Ice Skimmer Packages.**

3.3.3 System Verification Meeting

Following the successful completion of Product Verification Testing and formal acceptance of the Product Verification Report, the Contractor must convene and co-chair a System Verification Meeting which is to be held via teleconference/videoconference, unless otherwise specified by Canada. The purpose of this meeting is to ensure that the production configuration of the Ice Skimmer Package has been validated against all TSOR requirements through the Design Review and Product Verification processes.

3.3.4 Quality Assurance Testing

Quality Assurance Testing includes the tests and inspections conducted after the complete manufacture of each Ice Skimmer Package and prior to delivery (with the exception of the first Ice Skimmer Package which was tested as per section 3.3.2).

The Contractor must develop a Quality Assurance Plan, as per **CDRL item DID-SE-04**, for review and acceptance by Canada. The Quality Assurance Plan defines how the Contractor plans to verify conformity with the approved design for each Ice Skimmer Package, including the tests and examinations that will be carried out on: the first unit, random samples of units, every xth unit, each unit, etc. The final version of the Quality Assurance Plan must be formally accepted by Canada prior to conducting any Quality Assurance activities.

Prior to shipping an Ice Skimmer Package, the Contractor must:

- a. Perform all required Quality Assurance Testing identified in the Quality Assurance Plan (**CDRL item DID-SE-04**), demonstrating to Canada that the Ice Skimmer Package is fully operational;
- b. Submit a Quality Assurance Report for the Ice Skimmer Package, as per **CDRL item DID-SE-05**; and
- c. Obtain Canada's formal approval for the Ice Skimmer Package and the Quality Assurance Report. **Each Quality Assurance Report must be formally accepted by Canada prior to shipping each Ice Skimmer Package.**

STATEMENT OF WORK

The final versions of the Detailed Design Package, the Product Verification Plan, and the Quality Assurance Plan must be formally accepted by Canada prior to commencing manufacturing or any manufacturing related activities.

SECTION 4 EQUIPMENT TRAINING AND FAMILIARIZATION

4.1 GENERAL CONSIDERATIONS

The Contract includes options to provide two different types of equipment training and familiarization sessions to ensure that CCG personnel are appropriately trained on the safe operation and maintenance practices for the Ice Skimmer Package. The two different training sessions are:

- a) Technical Maintenance Training; and
- b) Operational Training

The Contractor must provide an Equipment Training and Familiarization Plan, as per **CDRL item DID-ETR-01**, for review and acceptance by Canada. The final version of the Equipment Training and Familiarization Plan must be formally accepted by Canada before Training options can be exercised.

The Contractor must provide all Equipment Training and Familiarization Materials, as per **CDRL item DID-ETR-02**, for review and acceptance by Canada. The final version of the Equipment Training and Familiarization Materials must be formally accepted by Canada before Training options can be exercised. All training materials must be bilingual.

Unless otherwise specified by Canada, all equipment training and familiarization sessions will be conducted at CCG facilities in locations identified in Schedule B - Deliveries and Milestones. The training sessions will be delivered in either English or French. Canada will confirm the required language of each session prior to delivery.

4.2 TECHNICAL MAINTENANCE TRAINING

4.2.1 Objective

The objective of the Technical Maintenance Training Session is to provide participants with an understanding of all components of the Ice Skimmer Package, the safe manner of operation, appropriate maintenance practices, and associated limitations of all the equipment to allow for the proper care and maintenance of the Ice Skimmer Package. Unless otherwise specified by Canada, the Contractor must deliver the Technical Maintenance Training Session using a combination of classroom (theoretical) and in-field (practical) training. The in-field training may take place dockside or aboard a ship.

4.2.2 Class Size and Participants

Each Technical Maintenance Training Session will be attended by certified CCG ER trainers, with the potential of additional personnel of varying experience and knowledge of ER equipment. It is anticipated that 6-10 participants will attend each Technical Maintenance Training Session. Training materials must be supplied to all participants.

4.2.3 Scheduling and Duration

Unless otherwise specified by Canada, the Technical Maintenance Training Session will be scheduled following delivery at a time that is agreed upon by Canada and the Contractor. Unless otherwise specified by Canada, the Technical Maintenance Training Session is expected to be delivered in a half workday (i.e., 3-4 hrs). The Technical Maintenance Training Session must be a distinct session from the Operational Training Session (Section 4.3).

4.3 OPERATIONAL TRAINING

4.3.1 Objective

The objective of the Operational Training Session is to provide participants with a working knowledge of the Ice Skimmer Package to allow for the safe operation of the system in normal vendor conditions. Unless otherwise specified by Canada, the Contractor must deliver the Operational Training Session using a combination of classroom (theoretical) and in-field (practical) training. The in-field training may take place dockside or aboard a ship.

4.3.2 Class Size and Participants

Each Operational Training Session will be attended by certified CCG ER trainers, with the potential of additional personnel of varying experience and knowledge of ER equipment. It is anticipated that 6-10 participants will attend each Operational Training Session. Training materials must be supplied to all participants.

4.3.3 Scheduling and Duration

Unless otherwise specified by Canada, the Operational Training Session will be scheduled following delivery at a time that is agreed upon by Canada and the Contractor. Unless otherwise specified by Canada, the Operational Training Session is expected to be delivered in a half workday (i.e., 3-4 hrs). The Operational Training Session must be a distinct session from the Technical Maintenance Training Session (Section 4.2).

SECTION 5 TECHNICAL MANAGEMENT

The Contractor must provide the following:

- a. **Operations and Maintenance Manual** for the Ice Skimmer Package, as per **CDRL item DID-TM-01**
- b. **As-Built Drawing Package** for the Ice Skimmer Package, as per **CDRL item DID-TM-02**
- c. **Recommended Spare Parts List** for the Ice Skimmer Package, as per **CDRL item DID-TM-03**
- d. **Equipment Instructions Illustration** for the Ice Skimmer Package, as per **CDRL item DID-TM-04**
- e. **Original Equipment Manufacturer (OEM) Manuals** for any off-the-shelf equipment provided with the Ice Skimmer Package. OEM manuals must be provided in both Canadian English and French. Where English or French are not readily available commercially, unilingual versions in either of Canada's official languages will be accepted. The manuals must be provided at least 20 business days prior to the first shipment.

APPENDIX 1 CONTRACT DATA REQUIREMENTS LIST

The following table defines the various columns of information found in the Contract Data Requirements List (CDRL). The CDRL is an all-encompassing table illustrating the submission details associated with every defined Data Item Deliverable (DID). Each DID details the content required for all contract deliverables.

IDENTIFICATION NUMBER (ID No.)

The Identification number is an alphanumeric designation to uniquely identify each individual DID. Note that the DIDs are categorized using the following designation:

- Project Management is defined with 'PM';
- System Engineering Management is defined with 'SE'
- Equipment Training and Familiarization is defined with 'ETR'; and
- Technical Management is defined with 'TM'.

TITLE OF DATA

Identifies the title of the DID referred to in the CDRL.

CONTRACT REFERENCE (REFERENCE)

Identifies the specific paragraph number of the Contract Requirement, Statement of Work, Request for Proposal, Specification, or other applicable document to assist in identifying the work effort associated with the DID.

LANGUAGE

Identifies the language of the delivered data. All draft documents must be provided in English. 'Bilingual' indicates the data item must be delivered in both the official Canadian English and French languages. Following acceptance of the Final English document by Canada, the Contractor must provide the Final French document.

DATE OF FIRST SUBMISSION

Indicates the initial submission date or associated constraint for the first submission of the data item.

SUBSEQUENT SUBMISSION DETAILS

Indicates the date(s) of subsequent submission(s) or associated constraint(s) of the data item. If no subsequent submission or associated constraint are required, this column is marked 'N/A'.

FINAL FORMAT

Indicates the format in which the final copy of the DID must be provided. Hard copies must be printed using at least 600 DPI on double sided 8.5"x11" sheets and must be collated and bound, unless otherwise specified by Canada. PDFs must be provided in a searchable format, e.g. Adobe Acrobat XI or equivalent.

STATEMENT OF WORK

October, 2020

STATEMENT OF WORK

ID No.	Title of Data	Reference	Language	Date of First Submission	Subsequent Submission Details	Final Format
Project Management						
DID-PM-01	Project Schedule ¹	SOW 2.2	English	3 business days prior to contract kick-off meeting	5 business days after receiving CCG comments; Updated and submitted weekly once accepted	PDF, native file
System Engineering Management						
DID-SE-01	Detailed Design Package ¹	SOW 3.2.1	English	20 business days after contract kick-off meeting	10 business days after receiving CCG comments	PDF (11x17", 600 DPI)
DID-SE-02	Product Verification Plan ¹	SOW 3.3.2	English	20 business days after the contract kick-off meeting	10 business days after receiving CCG comments	PDF, hard copies of certificates
DID-SE-03	Product Verification Report ²	SOW 3.3.2	English	3 business days after Product Verification Testing	2 business days after receiving CCG comments	PDF
DID-SE-04	Quality Assurance Plan ¹	SOW 3.3.4	English	20 business days after contract kick-off meeting	10 business days after receiving CCG comments	PDF, hard copies of certificates
DID-SE-05	Quality Assurance Report ²	SOW 3.3.4	English	3 business days after first Quality Assurance Test	3 business days after each subsequent Quality Assurance Test	PDF
Equipment Training and Familiarization						
DID-ETR-01	Equipment Training and Familiarization Plan ³	SOW 4.1	Bilingual	20 business days before the shipment of the last Ice Skimmer Package	5 business days after receiving CCG comments	PDF

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DID-ETR-02	Equipment Training and Familiarization Materials ³	SOW 4.1	Bilingual	20 business days before the shipment of the last Ice Skimmer Package	5 business days after receiving CCG comments	PDF
Technical Management						
DID-TM-01	Operations and Maintenance Manual ⁴	SOW 5	Bilingual	20 business days prior to first shipment	5 business days after receiving CCG comments	PDF, Hard copies with each delivery
DID-TM-02	As-Built Drawing Package ⁴	SOW 5	Bilingual	20 business days prior to first shipment	5 business days after receiving CCG comments	PDF (11x17", 600 DPI)
DID-TM-03	Recommended Spare Parts List ⁴	SOW 5	Bilingual	20 business days prior to first shipment	5 business days after receiving CCG comments	PDF (11x17", 600 DPI)
DID-TM-04	Equipment Instructions Illustration ⁴	SOW 5	Bilingual	20 business days prior to first shipment	5 business days after receiving CCG comments	PDF, Hard copies with each delivery

1 Final versions must be accepted by Canada prior to commencing manufacturing or manufacturing related activities.

2 The Product Verification Report must be accepted by Canada prior to commencing all subsequent manufacturing or manufacturing related activities, and each Quality Assurance Report must be accepted by Canada prior to shipping the units tested.

3 Final versions must be accepted by Canada prior to the shipment of the last Ice Skimmer Package.

4 Final versions must be accepted by Canada prior to the first shipment of the Ice Skimmer Package.

APPENDIX 2 DATA ITEM DESCRIPTIONS

Project Management

Title: Project Schedule	Identification Number: DID-PM-01
Description: The Project Schedule defines the timeline on which the Contractor will execute the project. Once accepted, the Contractor must submit an updated Project Schedule each week (Monday, 9am EST), including schedule risks and schedule slippage.	
Content: At a minimum, the following information must be included: A schedule that identifies and quantifies (level of effort) the Work to be done by the Contractor in order to successfully deliver on all requirements of the Contract and details, at a minimum: <ul style="list-style-type: none">a. Contract milestones (e.g., Contract Kick-off Meeting, review meetings, testing, acceptance, shipment, etc.);b. All tasks required for the comprehensive delivery of the Ice Skimmer Packages and all associated components (e.g., design, material acquisition, manufacturing, assembly, etc.), as per the Contract;c. All tasks required for the comprehensive delivery of all documentation deliverables, as per the Contract. The Project Schedule must also identify potential schedule risks to the project. Risk management responsibilities and a detailed risk mitigation plan must be included for each risk identified. In weekly updates to the Project Schedule, the project risks must be updated and slippage must be identified, explained, and include a specific risk mitigation plan.	

STATEMENT OF WORK
Data Item Descriptions

System Engineering Management

Title: Detailed Design Package	Identification Number: DID-SE-01
Description: The Detailed Design Package details the Contractor's technical solution for the Ice Skimmer Package. The Detailed Design Package will serve as a basis for the As-Built Drawing Package (DID-TM-02).	
Content: The Detailed Design Package must include the complete detailed design drawings based the contractors proposed Ice Skimmer Package. The drawings must: <ol style="list-style-type: none">a. Meet all requirements detailed in the TSOR (where requirements cannot be demonstrated visually, drawing notes must be used);b. Show the location of, assembly of, and interconnection between all components;c. Include a comprehensive Bill of Materials as per the template that will be provided by Canada;d. Incorporate changes and rectify any issues identified during the Contract Kick-off Meeting;e. Include all required design calculations; andf. Include the design of welded connections. <p>At a minimum, drawings of the following must be provided:</p> <ol style="list-style-type: none">i. The Skimmer head;ii. The hydraulic power unit;iii. The hose reel;iv. The steam generator; andv. The storage containers (empty and loaded). <p>Each drawing must include a drawing title, drawing number, revision number, drawing scale, units of measure, dimensioned features, legend (as applicable), assembly notes, and the initials of the author of the drawing.</p> <p>All calculations (including inputs, assumptions and outputs) must be provided for the following:</p> <ol style="list-style-type: none">i. The diesel engine and pump pairing;ii. The hydraulic circuit to govern the maximum rotational speed of the recovery module;iii. The buoyancy and stability of the skimmer head;iv. Safety factor calculations for all hoisting points. <p>Unless otherwise specified by Canada, all final drawings must be sealed and certified by a licensed Professional Engineer.</p>	

Title: Product Verification Plan	Identification Number: DID-SE-02
Description: The Product Verification Plan must clearly demonstrate how each TSOR requirement is met by the provided design. The Product Verification Plan defines all testing activities and certifications required prior to final design acceptance and must prove that the provided design is compliant with all TSOR requirements.	

STATEMENT OF WORK
Data Item Descriptions

Title: Product Verification Plan	Identification Number: DID-SE-02
<p>Content:</p> <p>The Product Verification Plan must identify all testing and certification that will take place during Product Verification Testing. The final accepted version of the Product Verification Plan must be used as the template for the Product Verification Test Report as per DID-SE-03.</p> <p>The Product Verification Plan must include:</p> <p>Pre-test Checklist</p> <p>A pre-test checklist must be included for all safety critical testing events, such as Product Verification Testing, to ensure that environmental conditions (e.g. wind speed, wave height) are within safe thresholds, all required equipment is present and operational, and all required personnel are present.</p> <p>Test Items</p> <p>At a minimum, all testing and inspections required in the TSOR, Annex B must be conducted on the first complete Ice Skimmer Package produced.</p> <p>Test Procedures</p> <p>For each Test Item, the following must be described</p> <ul style="list-style-type: none">• Test methods;• Safety precautions;• Measurement parameters;• Pass/fail criteria; and• Procedure in case of test interruption. <p>Mitigation and Re-testing Strategies</p> <p>Must include mitigation and re-testing strategies that will be used should any non-conformance issues arise during testing. Must provide a process for Canada's review and approval detailing all actions to be taken in order to address any non-conformance issues which may arise.</p> <p>Test Schedule</p> <p>Must specify the test date, time, and location for each test, and must reference the Project Schedule.</p> <p>Certifications and Material Data Sheets</p> <p>All Certifications and Material Data Sheets indicated in the TSOR are required for each Ice Skimmer Package, at a minimum. If a single certification or material data sheet applies to several Ice Skimmer Packages, copies must be appended to each associated Quality Assurance Report. At a minimum, certification, specifications and material data sheets must be provided for:</p> <ol style="list-style-type: none">a. Rated working pressure of the supplied hydraulic hose assemblies and the discharge hose assemblies (as per TSOR section B.5.3.);b. Rated proof pressure of the supplied discharge hose(s) (as per TSOR section B.5.3.);c. Professional Engineer signoff on all lifting point design calculations (as per TSOR section B.1.4.);d. Certificates confirming a minimum 90% of the initial storage period of all elastomeric materials (as per TSOR section C.7.); ande. Oil recovery and efficiency test report (as per TSOR section B.3.)	

STATEMENT OF WORK
Data Item Descriptions

Title: Product Verification Report	Identification Number: DID-SE-03
Description: The Product Verification Report details the results of the Product Verification Testing and demonstrates compliance of the Ice Skimmer Package with the standards outlined in the Product Verification Plan (DID-SE-02). The Product Verification Report must be certified by the Contractor as an accurate record of the test results.	
Content: As outlined in DID-SE-02, the test report must include, at a minimum: test personnel, item under test, test procedures, test conditions, problems encountered, and test results. The template accepted as per DID-SE-02 must be used. All relevant Certification and Material Data Sheets, or copies thereof, must be appended to the Product Verification Test Report.	

Title: Quality Assurance Plan	Identification Number: DID-SE-04
Description: The Quality Assurance Plan defines all testing activities and certifications required prior to shipment to demonstrate compliance with the Ice Skimmer Package design provided by the vendor and validated through the Product Verification Plan. The Quality Assurance Plan must incorporate the Quality Management Systems, as per Section 3.1, of all entities involved with the Work.	
Content: The Quality Assurance Plan must identify all testing and certification that will take place during Quality Assurance Testing. The final accepted version of the Quality Assurance Plan must be used as the template for the Quality Assurance Reports as per DID-SE-05. The Quality Assurance Plan must include: Test Items At a minimum, all testing and inspections described in the Quality Management System must be conducted on each Ice Skimmer Package, including: <ul style="list-style-type: none">• All QMS procedures related to the calibration of manufacturing and testing equipment;• The verification of all material certifications required for each Ice Skimmer Package; and• All testing and inspection of the Ice Skimmer Packages prior to shipment; Test Procedures For each Test Item, the following must be described <ul style="list-style-type: none">• Test methods;• Safety precautions;• Measurement parameters;• Pass/fail criteria; and• Procedure in case of test interruption. Mitigation and Re-testing Strategies	

STATEMENT OF WORK
Data Item Descriptions

Title: Quality Assurance Plan	Identification Number: DID-SE-04
<p>Must include mitigation and re-testing strategies that will be used should any non-conformance issues arise during testing. Must provide a process for Canada's review and approval detailing all actions to be taken in order to address any non-conformance issues which may arise.</p> <p>Test Schedule Must specify the test date, time, and location for each test, and must reference the Project Schedule.</p> <p>Certifications and Material Data Sheets All Certifications and Material Data Sheets indicated in TSOR are required for each Ice Skimmer Package, at a minimum. If a single certification or material data sheet applies to several Ice Skimmer Packages, copies must be appended to each associated Quality Assurance Report.</p>	

Title: Quality Assurance Report	Identification Number: DID-SE-05
<p>Description: The Quality Assurance Report details the results of the Quality Assurance testing outlined in the Quality Assurance Plan (DID-SE-04) and demonstrates to Canada that each Ice Skimmer Package is fully operational. The Quality Assurance Report must be certified by the Contractor as an accurate record of the test results.</p> <p>Content: As outlined in DID-SE-04, the test report must include, at a minimum: test personnel, item under test, test procedures, test conditions, problems encountered, and test results. The template accepted as per DID-SE-04 must be used.</p> <p>All relevant Certification and Material Data Sheets, or copies thereof, must be appended to each Quality Assurance Test Report.</p>	

Equipment Training and Familiarization

Title: Equipment Training and Familiarization Plan	Identification Number: DID-ETR-01
<p>Description: The Equipment Training and Familiarization Plan must describe in detail, the topics that will be delivered as part of the Operational and Technical Maintenance training and familiarization sessions as well as the associated schedule and training materials required.</p> <p>Content: At a minimum, the following information must be included:</p> <p>Objectives Identify the equipment training session and performance objectives for participants.</p> <p>Training Materials Identify all training materials and equipment required to deliver the equipment training sessions.</p> <p>Training Schedule & Session Duration</p>	

STATEMENT OF WORK
Data Item Descriptions

Title: Equipment Training and Familiarization Plan	Identification Number: DID-ETR-01
Provide an itinerary for the equipment training sessions, identifying all key training topics and the time allotted to each topic, including breaks for the participants.	

Title: Equipment Training and Familiarization Materials	Identification Number: DID-ETR-02
Description: The Equipment Training and Familiarization Materials must cover, in detail, all information that will be delivered as part of the Operational and Technical Maintenance training and familiarization sessions.	
Content: At a minimum, the following information must be included: Training Topics At a minimum, the following topics must be addressed: <ol style="list-style-type: none">a. The purpose and function(s) of each component of the Ice Skimmer Package;b. Any attendant safety hazards and the required personal protective equipment (PPE);c. Demonstration of how to operate, clean and store all components of the Ice Skimmer Package;d. Safe operational limitations of each Ice Skimmer Package component;e. Pre and post-operational checks;f. Fault location and diagnostic techniques; andg. Preventive and corrective maintenance procedures.	

Technical Management

Title: Operations and Maintenance Manual	Identification Number: DID-TM-01
Description: The Operations and Maintenance Manual must include all the necessary information required to safely operate the Ice Skimmer Package. The document must include colour labelled diagrams, pictograms, and illustrations, as well as sequential instructions where applicable. It must also must provide Canada with all the necessary information required for the preventive maintenance, corrective maintenance, and specialized maintenance of the Ice Skimmer Package.	
Content: At a minimum, the following Operational information must be included: <ol style="list-style-type: none">a. How to operate the complete Ice Skimmer Package, including all known hazards and safety measures to mitigate risk;b. All steps required to render the Ice Skimmer Package fully operational following delivery;c. How to install and remove components of the Ice Skimmer Package;d. How to troubleshoot the equipment;e. How to safely clean, store and transport the Ice Skimmer Package, including the identification of cautions and warnings to prevent crew and equipment from damage.	

STATEMENT OF WORK
Data Item Descriptions

Title: Operations and Maintenance Manual	Identification Number: DID-TM-01
<p>The manual must also include pre- and post-operational checklists for all supplied and furnished equipment. The Pre-Operational Checklist must define all indicators needed to ensure that the Ice Skimmer Package is operationally ready prior to operation. The Post-Operational Checklist must supplement its counterpart with cleaning procedures and recommended storage practices, as well as return-to-service instructions.</p> <p>At a minimum, the following Maintenance information must be included:</p> <ul style="list-style-type: none">a. Recommended preventative maintenance and preventative maintenance intervals. While not an exhaustive list, each maintenance procedure must:<ul style="list-style-type: none">• List the number of personnel and the estimated time to perform the activity;• Identify the potential hazards and personal protective equipment (PPE) to use when performing the activity;• Identify all parts, consumables, tools or equipment required to perform the maintenance activity;• Define the sequential steps to safely perform the activity (including pictograms);• Identify any subsequent effort required to verify that the activity was properly executed;• Identify maintenance dictated by regulatory or warranty requirements (e.g., safety equipment);b. Recommended corrective maintenance procedures.c. Any specialized maintenance activity that should be conducted by a qualified third party.	

Title: As-Built Drawing Package	Identification Number: DID-TM-02
<p>Description:</p> <p>The As-Built Drawing Package must include all engineering drawings for the Ice Skimmer Package that reflect any revisions or changes that occurred during the manufacturing process. All drawings must detail the key components of each assembly, and their respective interconnection(s).</p>	
<p>Content:</p> <p>At a minimum, the following information must be included:</p> <p>As-Built Drawing Package for the Ice Skimmer Package must reflect all changes to the Detailed Design during the construction process, and show the exact dimensions, geometry, and location of all Ice Skimmer Package components.</p> <p>If there are deviations between individual units or between series of units, they must be captured by noting the serial numbers to which specific details or drawings apply.</p> <p>Each drawing must include the drawing title, drawing number, revision number, drawing scale, units of measure, all measurements and configurations of components, dimensioned features, legend (as applicable), assembly notes, and author of drawing.</p> <p>Unless otherwise specified by Canada, all final drawings must be sealed and certified by a licensed Professional Engineer.</p>	

STATEMENT OF WORK
Data Item Descriptions

Title: Recommended Spare Parts List	Identification Number: DID-TM-03
Description: The Recommended Spare Parts List identifies all items that the Contractor recommends to support ongoing maintenance activities (i.e., preventive and corrective) for each Ice Skimmer Package. Canada will use these recommendations to support the decision to procure spare parts and to facilitate the lifecycle management process of the Ice Skimmer Package.	
Content: At a minimum, the following information must be included for each spare part: <ol style="list-style-type: none">a. Item name;b. Item description (i.e. performance characteristics such as product specification, attributes, form, function, etc.);c. Manufacturer name and address;d. Manufacturer model number;e. Manufacturer part number;f. Quantity recommended to support a single Ice Skimmer Package over two years of operation;g. Quantity recommended for warehousing;h. Expiry (if applicable);i. Price per unit (will be subject to price verification);j. Lead time when ordering;k. NATO Stock Number (if applicable)l. Warranty (only applicable if above and beyond the Articles of Agreement);m. Recommended storage requirements and conditions (special conditions included);n. Recommended maintenance (if applicable); ando. Identification as a critical spare (as/if applicable).	

Title: Equipment Instructions Illustration	Identification Number: DID-TM-04
Description: The Equipment Instructions Illustration must show, through a combination of text and illustration/pictograms, the appropriate deployment, operation, and retrieval of the Ice Skimmer Package. The Equipment Instructions Illustration must be secured to the inside one of the container doors and be waterproof to withstand a marine environment (for example, laminated pages or specialized paper). The Contractor may propose various waterproofing solutions for consideration by Canada. One bilingual hard copy must be provided for each Ice Skimmer Package.	
Content: At a minimum, the following information must be included: <ol style="list-style-type: none">a. Deployment of the system;b. Operation of the skimmer head and the steam generator;c. Retrieval of the system; andd. Any other relevant information, as approved by Canada.	

Annex B

Technical Statement of Requirements

Environmental Response Equipment Modernization/Mobile Incident Command Equipment Project

Ice Skimmer Package

TECHNICAL STATEMENT OF REQUIREMENTS
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TECHNICAL STATEMENT OF REQUIREMENTS
ACRONYMS AND ABBREVIATIONS

LIST OF ACRONYMS AND ABBREVIATIONS

ASME	American Society of Mechanical Engineers
ASTM	Formerly known as the American Society for Testing and Materials
BHP	Brake horsepower
CCG	Canadian Coast Guard
ConOps	Concept of Operations
DD	Two-digit day
DWL	Design waterline
ER	Environmental response
GSA	General Services Administration
IIW-ANBCC	Institute of Welding – Authorized National Body for Company Certification
ISO	International Organization for Standardization
MBS	Minimum breaking strength
MM	Two-digit month
OEM	Original equipment manufacturer
RPM	Rotations per minute
SAE	Society of Automotive Engineers
SOR	Statutory Orders and Regulations
TSOR	Technical Statement of Requirements
UHMW	Ultra-high molecular weight
US	United States
UV	Ultraviolet
WLL	Working load limit
YYYY	Four-digit year

TECHNICAL STATEMENT OF REQUIREMENTS
INTRODUCTION

SECTION 1 INTRODUCTION

1.1. BACKGROUND

The Canadian Coast Guard (CCG) is the lead federal agency responsible for ensuring the clean-up of all ship-source and mystery-source pollution spills into waters under Canadian jurisdiction. In fulfillment of this legislated mandate, the CCG maintains operational preparedness capacity to monitor, investigate, and respond to all reports of marine pollution incidents. The object of the Environmental Response Equipment Modernization/Mobile Incident Command Equipment (EREM/MICE) Project is to modernize CCG's response equipment inventory and supporting infrastructure.

1.2. PURPOSE

The CCG requires high capacity skimming capability to recover spilled oil in offshore, unsheltered and ice covered waters. This Technical Statement of Requirements (TSOR) defines the performance requirements and technical specifications for the provision of the Ice Skimmer, hereinafter referred to as the "Ice Skimmer Package".

The Ice Skimmer Package will consist of the following **major** components:

- a. A skimmer head;
- b. A hose reel;
- c. A hydraulic power unit (HPU);
- d. Storage container(s);
- e. A steam generator;
- f. One bilingual hard-copy of the Operations and Maintenance Manuals in both of Canada's official languages i.e., English and French; and
- g. One bilingual hard-copy of the Equipment Instructions Illustration.

1.3. SCOPE

All requirements, specifications, and other indications in this TSOR pertaining to the Ice Skimmer Package also apply to each individual component of the Ice Skimmer Package, whether they are acquired together as a complete package, individually, or in any other combination.

1.4. DOCUMENT CONVENTION

The following conventions apply to this TSOR:

TECHNICAL STATEMENT OF REQUIREMENTS
INTRODUCTION

- a. Dimensions stated as nominal are treated as approximate dimensions. Nominal dimensions reflect a standard whereby materials or products are generally identified for commercial sale but differ from the actual dimensions.
- b. Both the metric system and the imperial system of measurements may be indicated in this TSOR. Conversions from one system of measurement to the other may not be exact.

1.5. DEFINITIONS

The following definitions apply to this TSOR:

Terminology	Definition
Accessible	Capable of being reached for use, inspection, and maintenance without the removal of permanent structural elements.
Equivalent	A standard, means, or component type, which Canada has approved for this requirement as meeting the specified requirements for fit and function.
Fully Operational	A quality of readiness whereby an item has been specifically designed to function or perform in the stated environmental condition(s).
Long-Term Storage	The storage of all listed components for a period of 30 consecutive days or longer in the specified conditions.
Marine-Grade	A quality of a product specifically formulated or treated to withstand use at sea.
Off-the-Shelf	Standard articles and materials that are ordinarily produced by manufacturers in the normal course of business.
Provided	The element in question must be delivered, installed, and integrated in a fully operational state.
Recovery Efficiency	Ratio, expressed as a percentage, of the volume of oil recovered to the volume of total fluids recovered.
Safety Factor	Number of times that a load can be increased before failure occurs.

SECTION 2 REFERENCE DOCUMENTATION

2.1. APPLICABLE STANDARDS AND REGULATIONS

The Ice Skimmer Package must conform to all applicable laws, regulations, and industrial standards governing manufacture, safety, noise levels, and pollution in effect in Canada at the time of manufacture. International equivalent laws, regulations, and industrial standards will be accepted only if certified for equivalency by a Professional Engineer.

The following standards and specifications apply to the Ice Skimmer Package:

- ASTM F625/F625M-94: Standard Practice for Classifying Water Bodies for Spill Control Systems.
 - ISO 2230: Rubber Products – Guidelines for Storage
 - ASTM F631-15: Standard Guide for Collecting Skimming Performance Data in Controlled Environments
 - ASTM F2709-15: Standard Test Method for Determining a Measured Nameplate Recovery Rate of Stationary Oil Skimmers
 - ASTM F962-04: Standard Specification for Oil Spill Response Boom Connection: Z-Connector
 - SOR/2005-3: Off-Road Compression-Ignition Engine Emission Regulations
 - ISO 668: Series 1 freight containers – Classification, dimensions and ratings
 - ISO 1496-1: Series 1 freight containers - Specification and testing – Part 1: General cargo containers for general purposes
 - ISO 7010: Graphical symbols – Safety colours and safety signs – Registered safety signs
-

TECHNICAL STATEMENT OF REQUIREMENTS
REFERENCE DOCUMENTATION

2.2. REFERENCE DOCUMENTATION VERSION

Unless otherwise specified by Canada, any amendment issued to the documents specified in section **Error! Reference source not found.** must reflect the version in effect on the date of Contract Award.

2.3. ORDER OF PRECEDENCE

In the event of a discrepancy between this TSOR and the documents referenced herein, the Contractor must adhere to the following order of precedence:

- a) Canadian Regulations;
 - b) This TSOR; and
 - c) Industry and other applicable standards and specifications.
-

SECTION 3 ICE SKIMMER PACKAGE REQUIREMENTS

3.1. DESIGN OVERVIEW

3.1.1. GENERAL CONSIDERATIONS

3.1.1.1. The Ice Skimmer Packages must be delivered complete, tested, and ready to use.

3.1.1.2. The selection of equipment, fittings, fasteners, hardware, attachments, and fabrication methods used in all Ice Skimmer Packages must be standardized to minimize the number of unique spares. Identical components must be used in all Ice Skimmer Packages, following Canada's design acceptance.

3.1.1.3. All equipment must be installed per the OEM installation recommendations.

3.2. OPERATIONAL REQUIREMENTS

The Ice Skimmer Package must meet the following operational requirements:

A.1	The Ice Skimmer Package must be fully operational in air temperatures ranging from -20°C to +40°C and when subjected to rain, sleet, snow, and ocean spray during transportation, operational deployment, and storage.
A.2	The Ice Skimmer Package must be deployable in water temperatures ranging from -2°C to +25°C in both fresh water and salt water environments.
A.3	The Ice Skimmer Package must be fully functional after being stored for extended periods of time in environments with an ambient air temperature ranging from -40°C to +40°C.
A.4	The Ice Skimmer Package must be fully operational in arctic waters with up to 70% ice coverage for both floating ice and slush ice.
A.5	The Ice Skimmer Package must be fully deployable and operational in waters classified as Type III-Open Water in ASTM F625/F625M-94 (2017), Standard Practice for Classifying Water Bodies for Spill Control Systems. Type III-Open Waters are equivalent to wave heights ≤ 2 metres (m) or Beaufort Force 4 sea conditions.
A.6	The Ice Skimmer Package must be deployable, operable and retrievable by a maximum of 2 personnel, with the assistance of a crane or a davit.
A.7	The Ice Skimmer must be operable by a remote control stand or by tethered control up to 20 ft.
A.8	The Ice Skimmer must be deployable and retrievable from a ship deck or dock with a freeboard of up to 5 m.

ICE SKIMMER REQUIREMENTS

3.2.1. ICE SKIMMER

The Ice Skimmer Package must meet the following requirements:

B.1 General Requirements

B.1.1	The Ice Skimmer Package must have a shelf life/storage life, under controlled storage conditions, of at least twenty (20) years.
B.1.2	All components of the Ice Skimmer Package that will go into the water during the course of normal operations must be abrasion resistant to prevent damage from floating debris or ice. All components of the Ice Skimmer Package must be of durable and robust construction.
B.1.3	All components of the Ice Skimmer Package must be provided with a means of rapid and simple shut down in emergency situations.
B.1.4	The minimum safety factor of all hoisting points (and the adjacent support structure) must be at least 6-to-1; i.e., the ratio of the minimum breaking strength (MBS) to the working load limit (WLL). Design calculations supporting the safety factor of all hoisting points must be certified by a licensed engineer as per DID-SE-01, Detailed Design Package.
B.1.5	The Ice Skimmer Package must include any accessories or features that are necessary to deploy the skimmer head from the side of a vessel or dock with the use of a single overhead crane, without causing any damage to the components of the Ice Skimmer Package and without resulting in any chaffing or kinking of the hoses.

TECHNICAL STATEMENT OF REQUIREMENTS
ICE SKIMMER PACKAGE REQUIREMENTS

B.2 Identification and Markings

B.2.1	The vendor must provide a unique product identifier for each component of the Ice Skimmer Package. The product identifier must comply with the following format: ABCD-DD-MM-YYYY-Manufacturer's Serial #. Proposed product identifier is subject to Canada's acceptance.
B.2.2	Label plates in both Canadian English and French must be used to identify each control, switch, gauge, and display. Label plates must also be used to indicate safe working limits, maximum capacities, and masses of equipment.
B.2.3	Label plates must be manufactured to last a minimum of 20 years under typical use.
B.2.4	The Ice Skimmer Package must indicate all hazards with both Canadian English and French warning labels or clear graphical symbols per ISO 7010, Graphical symbols – Safety colours and safety signs – Registered safety signs.
B.2.5	The Ice Skimmer Package must include an Equipment Instruction Illustration as per DID-TM-04, Equipment Instruction Illustration.
B.2.6	The content and arrangement of all label plates and of the Equipment Instruction Illustration must be approved by Canada prior to installation.

B.3 Skimmer Head

B.3.1	The Ice Skimmer must have a rated oil recovery capacity of at least 100 cubic meters per hour (m ³ /h).
B.3.2	The Ice Skimmer head's primary oil recovery mechanism must be, at a minimum, capable of recovering oils and bitumen of at least 540 000 centistokes (cSt).
B.3.3	The Ice Skimmer must incorporate features to protect the oil collection mechanism from floating ice and debris and to prevent collection of floating ice and debris by the skimmer head.
B.3.4	The body of the Ice Skimmer head must be constructed of a light-weight corrosion resistant material.
B.3.5	The Ice Skimmer head must incorporate floatation elements to allow for operation while free floating. The Ice Skimmer must be capable of operating up to a 70 m hose-length from the deployment vessel. The floatation elements must be designed to minimize the footprint of the skimmer head in the water.
B.3.6	The Ice Skimmer head must be capable of maintaining buoyancy should any or all floatation element(s) be breached.
B.3.7	The Ice Skimmer head must incorporate a pump that: <ul style="list-style-type: none"> a) Has steam and hot water injection capabilities; b) Can pump oil and bitumen of at least 540,000 cSt a distance of 70 metres (m) at a minimum rate of 50 m³/hour; c) Does not create an oil-water emulsion during pumping; and d) Allows for annular water injection at the discharge side of the pump.
B.3.8	The Ice Skimmer head recovery efficiency must be at least 90% when operating at full capacity for each of the following oil types: <ul style="list-style-type: none"> a) Light oil, such as diesel or jet fuel; b) Medium oil, such as lube or fresh crude oil; and c) Heavy oil such as bunker C and bitumen.
B.3.9	All oil recovery performance data must be collected in accordance with the general procedure defined in ASTM F631-15, Standard Guide for Collecting Skimming Performance Data in Controlled Environments; or the test protocol defined in ASTM F2709-15, Standard Test Method for Determining a Measured Nameplate Recovery Rate of Stationary Oil Skimmers.
B.3.10	All oil recovery performance data must be collected or verified by one of the following entities: <ul style="list-style-type: none"> a) A classification society, such as Det Norske, Veritas, American Bureau Standards, Bureau Veritas, or Lloyd's Register; b) An independent laboratory; or c) An independent test facility, such as Ohmsett.
B.3.11	Should any boom connector be incorporated into the Ice Skimmer Package design, it must be capable of interfacing with the containment boom connector defined in ASTM F962-04 (2010), Standard Specification for Oil Spill Response Boom Connection: Z-Connector. The following exceptions apply to this Standard: <ul style="list-style-type: none"> a) Toggle pin holes must be located 4.5 inches above and below the design waterline (DWL); and b) The toggle pin hole diameter must be 13/32 inches.

TECHNICAL STATEMENT OF REQUIREMENTS
ICE SKIMMER PACKAGE REQUIREMENTS

B.4 Hydraulic Power Unit

B.4.1	The Ice Skimmer Package hydraulic power unit must be designed to connect to and provide the hydraulic needs of all the components of the Ice Skimmer Package.
B.4.2	The hydraulic power unit must be sized to provide all the required hydraulic pressure and volume without being at its maximum output.
B.4.3	The power supply of the hydraulic power unit must be diesel and must satisfy the Tier 4 emission standards referenced in SOR/2005-32, Off-Road Compression-Ignition Engine Emission Regulations.

B.5 Hose Assemblies

B.5.1	All hydraulic hose assemblies required to operate all the components of the Ice Skimmer Package must be included in the package. Hoses must be at least 70 m in length as per B.3.5.
B.5.2	All oil transfer hose assemblies required for the operation of the Ice Skimmer Package must be included in the package. Hoses must be at least 70 m in length as per B.3.5.
B.5.3	The minimum rated pressure of all fitted, flexible hose assemblies must exceed the working pressure that they may be subjected to while in service. All hose assemblies must be static pressure tested at 1.5 times their rated working pressure for a minimum of 1 hour to confirm no leakage.
B.5.4	All hoses must be provided in detachable segments of 20 to 25 m. This is to allow the skimmer to be deployed with a length of hose shorter than the 70 m required in B.5.1 and B.5.2.
B.5.5	Enough Hose floats must be provided with the Ice Skimmer package to allow for all the hoses to remain buoyant even when filled.

B.6 Accessory Units

B.6.1	A manual reel must be provided as part of the Ice Skimmer Package to hold all hoses. The reel must allow access to each hose type without having to remove other hoses.
B.6.2	The hose reel must have forklift pockets and lifting points that allow for an overhead lift.
B.6.3	One diesel-powered steam generator must be supplied as part of the Ice Skimmer Package. The steam generator must be sized to produce the amount of steam/hot water required by the Ice Skimmer Package for operation.
B.6.4	The steam generator must be capable of producing steam from both salt water and fresh water during operation.
B.6.5	All hoses, cables and parts necessary to use the steam generator in conjunction with the other components of the Ice Skimmer Package must be supplied.

B.7 Storage Container

B.7.1	All Ice Skimmer Package components must be stored in 10 foot ISO containers that adhere to the dimensions of a 1D container as specified in ISO 668 : Series 1 freight containers – Classification, dimensions and ratings. Should the Ice Skimmer components not fit in one 10 foot ISO container, then multiple 10' ISO containers must be provided to hold all the components.
B.7.2	The open top ISO containers must follow the requirements defined in ISO 1496-1 : Series 1 freight containers - Specification and testing – Part 1: General cargo containers for general purposes.
B.7.3	All provided ISO containers must be supplied with a completely removable hard top that can be locked into the container. The removable top must have evenly spaced, non-protruding lifting point, to allow for removal by crane.

B.8 Hoisting Slings and Hardware

B.8.1	The hoisting slings must be provided with all the necessary hardware and components required to lift a full Ice Skimmer Package storage container with the use of an overhead crane.
B.8.2	The hoisting slings and provided hardware must be capable of lifting an Ice Skimmer Package container when full.
B.8.3	Each supplied sling must be permanently marked with the following: <ul style="list-style-type: none"> a) a unique identifier; b) the WLL; c) the sling length d) the sling material; e) the manufacturer; f) the date of manufacture

TECHNICAL STATEMENT OF REQUIREMENTS
ICE SKIMMER PACKAGE REQUIREMENTS

FABRICATION REQUIREMENTS

The Ice Skimmer Package must meet the following fabrication requirements:

C.1	The Ice Skimmer Package must be constructed and finished with a high degree of workmanship, where surfaces are free from blemishes, burrs, defects, irregularities, sharp edges, and other conditions that would be deleterious to the finished component.
C.2	Parts must be properly aligned to preclude any binding and deformation as a result of assembly or operation.
C.3	All equipment subject to freezing temperatures must be kept drained, except during testing and commissioning.
C.4	All parts and equipment must be kept clean and protected against dust, moisture, rapid temperature changes, and foreign matter during manufacture, storage, pre-installation staging, assembly, installation, and post installation.
C.5	All materials used in fabrication must be new, unused and free from defects and imperfection that might affect the serviceability of the finished product; resist corrosion and wear under the environmental conditions specified; and sized or selected to satisfy all the performance requirements specified.
C.6	All synthetic polymers subjected to sunlight must be treated to protect against ultraviolet (UV) degradation, embrittlement, and mold.
C.7	All elastomeric materials in unassembled components and assemblies must contain at least 90% of the initial storage period (as recommended in ISO 2230:2002, Rubber Products – Guidelines for Storage) at the date of delivery to Canada.
C.8	Direct contact between dissimilar metals expected to cause galvanic corrosion must be avoided. If such contact cannot be avoided, an insulating material must be installed between the dissimilar metals to minimize the corrosive effect. The Contractor may propose alternate methods to minimize galvanic corrosion for consideration by Canada.