



**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Specified herein - précisé dans les présentes.

**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**  
TPSGC/PWGSC  
1550 Avenue d'Estimauville  
Québec  
Québec  
G1J 0C7

<b>Title - Sujet</b> Cale Sèche Martha L. Black 2020	
<b>Solicitation No. - N° de l'invitation</b> F3065-201043/A	<b>Amendment No. - N° modif.</b> 005
<b>Client Reference No. - N° de référence du client</b> F3065-201043	<b>Date</b> 2020-04-30
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$QCV-018-17905	
<b>File No. - N° de dossier</b> QCV-9-42262 (018)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2020-05-14</b>	
<b>Time Zone</b> Fuseau horaire Heure Avancée de l'Est HAE	
<b>F.O.B. - F.A.B.</b> Specified Herein - Précisé dans les présentes	
<b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input checked="" type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Piras, Gabriel	<b>Buyer Id - Id de l'acheteur</b> qcv018
<b>Telephone No. - N° de téléphone</b> (418) 956-2350 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

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**TITLE : CCGS Martha L. Black - Drydock Refit - 2020  
Amendment 005**

Included in the present amendment:

1. Questions and answers 15 to 18
2. Modification #6 (to the bid solicitation)
3. Modifications to the Specifications
4. Addition of technical documents

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**QUESTIONS AND ANSWERS**

**Question 15**

We know that additional clarification with regards to Class surveyor will be forthcoming in the Minutes of the Bidder's conference;

- (a) However, I'm wondering if CCG and ABS have already discussed the electrical scope and associated documentation that will need to be submitted for approval. The indication from the bidder's meeting was that an updated load analysis and short circuit study would not be required, but we wanted to confirm that this has been agreed with Class.
- (b) Furthermore, it our understanding that the successful bidder will be required to update the single line diagram and the main switchboard drawings. Will these need to be submitted and approved by Class? If so, are we to price that cost into our bid?

*Answer :*

- (a) The vessel currently has a preliminary load analysis study updated in 2019, which will be finalized after this dry dock to include the changes that will be made. The load analysis will be finalized by the firm that carried out the work in 2019. The short-circuit study was done in 2015 with the replacement of all the main circuit breakers of the swithboards(main, auxiliary and emergency) and submitted to TC /MS. Since the delegation of the ship with ABS in 2018 we have agreed on the update of the studies.
- (b) No, the CCG and the firm responsible for the load analysis will submit these documents to ABS. The contractor must provide the new single-line plans of the distribution panels to the equipment, in the case of the sanitary system section 19 and repair of the kitchen section 17 only.

**Question 16**

Spec. 11.3.6 para e : Contradiction - Please clarify whether CCG supplies the oil or is it the contractor. Para e mentions both.

*Answer :* Terrasso 100 oil must be supplied by the contractor.

**Question 17**

Spec. 11.3.5 para f : Please clarify. The bearings hold 50L each and not 300L.

*Answer :* The thrust bearings hold 150L each.

**Question 18**

Spec. 9.0 Hull Coatings : The hull requires blasting and painting; should there not be an allowance for coverage of the hull to ensure environmental regs. are met pertaining to each province.

*Answer :* No.

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**MODIFICATION #6 (TO THE BID SOLICITATION)**

Appendix 1 of Annex I – Price per Item Sheet – is amended as follows:

**Insert :** The following line in the table of section 1.1 Scheduled Work:

45.0	Communications and Navigation	Optional Work
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**Insert :** The following line in the table of section 1.2 Optional Scheduled Work:

45.1	Forward Mast modification (optional)	_____ \$
45.2	Satellite TV Antenna ( Sea TEL 120TV) (optional)	_____ \$
45.3	Thales VesseLink (optional)	_____ \$
45.4	Marine Direction Finder Rhotheta RT-500M (optional)	_____ \$

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**MODIFICATIONS TO THE SPECIFICATIONS**

The Technical Specifications are amended as follows :

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**45.0 :** Add section 45.0 - Communications and Navigation, which is attached at the end of this Amendment.

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**ADDITION OF TECHNICAL DOCUMENTS**

The following technical documents are included in this modification.

See electronic attachment « F3065-201043-A\_\_References Modif 005 - References Amend 005.zip ».

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ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

## 45.0 **COMMUNICATIONS ET NAVIGATION**

Notes : The Government of Canada requires a separate quote for each subsection of Section 45.

### 45.1 **FORWARD MAST MODIFICATION (OPTIONAL)**

#### 45.1.A **Scope**

45.1.A.1 The contractor shall to modify the foremast. to permit the addition, removal or relocation of communication and navigational equipment. This modification involves an antenna relocation. The work in this section is optional.

#### 45.1.B **References**

##### Regulations

- a) Canada Shipping Act 2001 - Hull Construction Regulations
- b) Maritime Occupational Health and Safety Regulations

##### Standards

- a) Fleet Safety and Security Manual (DFO/5737)
- b) IACS No. 47 - Shipbuilding and Repair Quality Standard
- c) CSA W59-08 (R2008) - Welded Steel Construction
- d) CSA W47.1-09 - Certification of Companies for Fusion Welding of Steel
- e) Society for Protective Coatings (SSPC) Standards
- f) TP127E – Ship Electric Standard
- g) 70- 000-000-EU-JA-001 - Specification for the Installation of Shipboard Electronic Equipment

##### Drawings/ Documents

- a) 06-050-002 R1
- b) M017-11-001
- c) LM601-010-AL\_V1
- d) 97-143895
- e) Sea Tel 120 TV Product Sheet
- f) H-29-10
- g) Sea Tel 120 TV product sheet
- h) DSCF0501
- i) DSCF0505

#### 45.1.C **Technical Description**

45.1.C.1 Provide materials and labour to perform the work set out in this section.

45.1.C.2 The Contractor shall include in its price the erection of scaffolding on forward mast to perform the Work set out in these Specifications or to ensure

safe working at height for all parties involved. The Contractor will be required to allow the Inspection Authority and CCG electronics technicians to use existing equipment to do their work.

- 45.1.C.3 The Contractor must supply all equipment, enclosures, ventilation, staging, chain falls, craneage, slings and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of an adequate safe working load for the expected duties. Any brackets or other welded attachments required in the performance of this specification must be welded into place by CWB-certified welders certified to welding Std. W47.1, Div. 1 and 2.
- 45.1.C.4 The Contractor shall perform the modification of the foremast in accordance with Drawing 06-050-002-R1. This modification will allow for the installation of the new Sea-Tel 120 TV antenna. The weight of the antenna is 255 lbs. Plan 06-050-002-R1 was designed for a sistership of the Martha L. Black. The contractor should note that Plan 06-050-002-R1 is to be used as a reference only for structural modifications and installation of the Sea-Tel antenna. There will be variations in the electronics equipment and these differences are shown on Drawing M017-11-001.
- 45.1.C.5 The upper part of the mast including the existing upper platform, the 6 inch diameter pipe mast and all appendages shall be removed. The position of the appendages shall be recorded to allow accurate re-installation. These items, including mast appendages, brackets and ladders must be stored safely until re-installed.
- 45.1.C.6 A 12-inch diameter SCH 40 tubular mast, approximately 4.4 metres high, shall be installed in accordance with Drawing 06-050-002-R1; this height may be reduced to provide sufficient cable length to attach removed equipment such as navigation lights.
- 45.1.C.7 The maintenance platform shall be fabricated as shown in drawing 06-050-002-R1; for more information, see details A, C and D.
- 45.1.C.8 A Sea-Tel antenna mounting base, manufactured from 6" diameter pipe, SCH 80, shall be attached to the maintenance platform as shown in detail B; a Sea-Tel mounting plate, as shown in detail E, shall be attached to the upper end.
- 45.1.C.9 The finishing colour of the mat is beige RAL 1001. The contractor shall apply a full coating to the new structure and all bare metal surfaces.. All metal surfaces must be protected against corrosion. The new coating must be compatible with the existing coating. The contractor shall comply with the coating manufacturer's requirements

for the preparation and application of the coating. The steel shall be sandblasted in accordance with SSPC-SP 10. The current paint system on the front mast consists of the following 3 products:

- a) Interzinc 52
- b) Interguard 264
- c) Interthane 990

- 45.1.C.10 The Contractor shall employ a level 2 technician certified by NRCan for the inspection of welds. The technician shall visually inspect 100% of the welds. The technician shall perform a non-destructive magnetic particle test on 25% of the welds.
- 45.1.C.11 When dismantling the existing mast structure, the contractor shall pay particular attention to the wiring of the navigation lights and electronics cables which shall not be damaged to allow for use in the new structure. The wiring of the navigation lights will be dismantled by the contractor. The contractor will have to relocate and reinstall the masthead lights on the new structure in accordance with regulatory requirements. This work also includes the relocation of the blue search and rescue light in accordance with plan M017-11-001.
- 45.1.C.12 The current position of the electronics equipment is shown on Plan LM601-01AL\_V1. As a result of the work, some equipment will be permanently removed, replaced or relocated to allow final configuration in accordance with Plan M017-11-001. The final arrangement of the electronic equipment shall be in accordance with drawing M017-11-001.
- 45.1.C.13 Electronic Equipment localisation or removal. The Contractor shall therefore consider the following points in its bid :
- a) The Contractor shall relocate the SAT-C antenna (#4) on the new structure according to dwg LM601-010-AL\_V1 et M017-11-001. The contractor must reuse existing wiring and seating.
  - b) The M-SAT antenna (#27), its seating and its wiring shall be removed and returned to CCG for storage on the vessel. This antenna will not be reinstalled.
  - c) The FBB antenna (#6), its seating and its wiring shall be removed and returned to the CCG for storage on the vessel. This antenna will not be reinstalled.
  - d) The VHF-FM antenna #1 (#24) will be relocated in accordance with Plan M017-11-001 and LM601-010-AL\_V1 using existing seating and wiring.
  - e) The Anemometer (#43) and Avos Weather Station (#9) will be relocated in accordance with Plan M017-11-001 and LM601-010-AL\_V1 using existing seating and wiring.

- f) The removal and passage of the wires for points "a,b,c,d,e" is the responsibility of the contractor. Final connection and start-up of the electronic systems will be done by a CCG Electronics Technician.

#### 45.1.D **Proof of Performance**

##### Inspections

- 45.1.D.1 The work shall be deemed to be in compliance with the regulations by the ABS inspector and the CCG Electronics Technician.

##### Testing

- 45.1.D.2 Once the relocations are complete, CCG electronics technicians will test all equipment in the presence of a representative of the contractor. The contractor will be required to demonstrate the proper operation of the navigation lights.

#### 45.2 **SATELLITE TV ANTENNA ( SEA TEL 120TV) (OPTIONAL)**

##### 45.2.A **Identification**

- 45.2.A.1 The intent of this specification is to install an owner supplied Satellite TV antenna on an new structure on top of the foremast.
- 45.2.A.2 Contractor must supply all materials and parts required to perform the specified work unless otherwise stated.
- 45.2.A.3 This work must be carried out in conjunction with the other essential electronic equipment requirements detailed in main specification.
- 45.2.A.4 CCG Technicians must have access to the yard to proceed with wiring terminations and commissioning.
- 45.2.A.5 CCG Technicians must be allowed to run short cables, install equipment inside consoles or racks if required during commissioning and troubleshooting
- 45.2.A.6 The work in this section is optional.

##### 45.2.B **References**

##### 45.2.B.1 **Equipment Data**

45.2.B.1.1 The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

45.2.B.1.2 The following specific equipment is owner supplied:

a) Satellite TV Antenna Radome (Seatel TV 120) with gasket.

45.2.B.1.3 All new cables are supplied by Canada.

a) RG-11

b) 14AWG, 3 Conductors (Tricab 14AWG/3C)

45.2.B.1.4 All cable supplied by Canada which has not been used must be returned to the owner prior to the acceptance of the item.

45.2.B.2 **Drawings and manuals**

45.2.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Document Number	Document Title
LM601-010-AL	Martha L. Black – Antenna Arrangement Drawing
99-141160 Rev A	Seatel 120 TV Manual

45.2.B.3 **Regulations and Standards**

45.2.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
	Fleet Safety and Security Manual (DFO/5737)	
<b>Publications</b>		
	N/A	
<b>Standards</b>		
TP127E	Ships Electrical Standards	
IEEE 45:2002	Recommended Practice for Electrical Installations on Ships	

70- 000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	
<b>Regulations</b>		
	Canada Shipping Act, 2001	

45.2.C **Statement of Work**

45.2.C.1 **General**

45.2.C.1.1 The Contractor must supply all equipment, enclosures, ventilation, staging, chain falls, craneage, slings and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of an adequate safe working load for the expected duties. Any brackets or other welded attachments required in the performance of this specification must be welded into place by CWB-certified welders certified to welding Std. W47.1, Div. 1 and 2.

45.2.C.1.2 Prior to any hot work taking place, the Contractor must ensure that the area of work and all equipment, wiring, transits, etc. have been sufficiently protected from any sparks or metal filings. The Contractor must also ensure that the area of work, the system, and the adjacent space is certified as gas free and suitable for hot work as per the Fleet Safety and Security Manual.

45.2.C.1.3 The Contractor shall be responsible to ensure that all areas have been thoroughly cleaned and free of any debris resulting from the performance of this specification item.

45.2.C.1.4 Contractor must follow existing cable trays throughout the vessel where fitted. Once installed, all cabling must be secured as per TP127.

45.2.C.1.5 Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure, and as per ISM fleet safety manual.

45.2.C.1.6 Upon final installation, testing must be carried out as per Section 45.2.D.2 Testing/Trials of this document.

45.2.C.2 **Equipment**

45.2.C.2.1 Contractor must install the following satellite TV equipment:

- a) Satellite TV Antenna (Seatel 120 TV)

- b) Contractor shall modify the foremast mast like describe in the spec and install the new antenna flange in accordance with manual refered to in section 45.2.B.2 (Manual 99-141160-a\_dealer-technical-manual\_sea-tel-tvtvhd\_eccn-ear99.pdf, Page 196 and 200).
- c) The antenna must be attached to the base defined in Article 45.1.C.8.
- d) Contractor shall apply a paint system in accordance with article 45.1.C.9.

45.2.C.3 **Cables**

45.2.C.3.1 Contractor must install the cables listed in **45.2** below and as per guidance drawing.

45.2.C.3.2 Contractor must supply and install stamped metal tag on all cables listed in the Table below. Labels must be install at each end of the cable as well as at the entry and exit of any transit they pass through

**Table 45.2**

<b>Cable Label/Type</b>	<b>Source</b>	<b>Destination</b>	<b>Length (m)</b>
TVRO-1 LMR-400-75	Electronic workshop (Satellite TV MXP)	Satellite TV Antenna Seatel 120 TV	40
TVRO-2 LMR-400-75	Electronic workshop (Satellite TV MXP)	Satellite TV Antenna Seatel 120 TV	40
TVRO-3 LMR-400-75	Electronic workshop (Satellite TV MXP)	Satellite TV Antenna Seatel 120 TV	40
TVRO-4 14/3	Electronic workshop (AC Outlet TBD)	Satellite TV Antenna Seatel 120 TV	40

45.2.C.3.3 Contractor must be responsible for unpacking/repacking all cable transits/glands.

45.2.C.4 **Location**

45.2.C.4.1 Foremast

45.2.C.4.2 Electronic Workshop

45.2.C.5 **Interferences**

45.2.C.5.1 The contractor is responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

45.2.D **Proof of Performance**

45.2.D.1 **Inspection Points**

45.2.D.1.1 ABS class surveyor and the Coast Guard Technical Authority (CGTA) must be present at the inspection of the work

45.2.D.1.2 A cable which has been installed by the contractor that is found defective (fails a continuity test) or damaged shall be replaced at contractor's expense (material and labor).

45.2.D.2 **Testing/Trials**

45.2.D.2.1 Electronic equipment which has been removed for the performance of this specification must be returned in operational condition. They must be packaged properly and stored in a location determined with the Chief engineer at the time of installation

45.2.D.2.2 Terminations

a) CCG Technicians will complete the wiring terminations on the system. They must be granted access to the contractor's job site in all time.

45.2.D.2.3 Commissioning

a) CCG Technicians will complete the commissioning on the system. They must be granted access to the contractor's job site in all time.

45.2.D.3 **Certification**

45.2.D.3.1 Certificates in accordance with the Documentation section of the General Notes.

45.2.D.3.2 CCG Technical Authority will complete the certification on this system after system has been installed and commissioned

45.2.D.4 **Documentation**

45.2.D.4.1 A report of weld inspection shall be submitted to the IA.

45.2.D.4.2 The contractor shall provide a quality assurance report indicating that the new section of the forward mast, the new flange and new antenna installation have been inspected by its quality assurance department and that it is properly installed and properly adjusted.

45.2.D.5 **Training[ – Not Used]**

45.2.D.6 **Spares**

45.2.D.6.1 All cable supplied by Canada which has not been used must be returned to the owner prior to the acceptance of the item.

### 45.3 **THALES VESSELINK (OPTIONAL)**

#### 45.3.A **Identification**

45.3.A.1 The intent of this specification is to install an owner supplied Iridium Satellite, voice and data, in replacement of an older one on the rear mast. The new iridium satellite antenna will be installed at the same location on the rear mast.

45.3.A.2 Contractor must supply all materials and parts required to perform the specified work unless otherwise stated.

45.3.A.3 This work must be carried out in conjunction with the other essential electronic equipment requirements detailed in main specification.

45.3.A.4 CCG Technicians must have access to the yard to proceed with wiring terminations and commissioning.

45.3.A.5 CCG Technicians must be allowed to run short cables, install equipment inside consoles or racks if required during commissioning and troubleshooting.

45.3.A.6 The work in this section is optional.

#### 45.3.B **References**

##### 45.3.B.1 **Equipment Data**

45.3.B.1.1 The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

45.3.B.1.2 The following specific equipment is supplied by Canada:

a) Thales Iridium VessLink 350, antenna, antenna support and terminal.

45.3.B.1.3 All new cables are supplied by Canada.

a) LMR-600 (Times Microwave)

b) Cat-6 Cable

45.3.B.1.4 All by Canada which has not been used must be returned to the owner prior to the cable supplied acceptance of the item.

##### 45.3.B.2 **Drawings and manuals**

45.3.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Document Number	Document Title
LM601-010-AL	Martha L. Black – Antenna Arrangement Drawing
84464 Rev B	VesseLink Install Guide

45.3.B.3 **Regulations and Standards**

45.3.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
	Fleet Safety and Security Manual (DFO/5737)	
<b>Publications</b>		
	N/A	
<b>Standards</b>		
TP127E	Ships Electrical Standards	
IEEE 45:2002	Recommended Practice for Electrical Installations on Ships	
70- 000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	
<b>Regulations</b>		
	Canada Shipping Act, 2001	

45.3.C **Statement of Work**

45.3.C.1 **General**

45.3.C.1.1 The Contractor must supply all equipment, enclosures, ventilation, staging, chain falls, craneage, slings and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of an adequate safe working load for the expected duties. Any brackets or other welded

attachments required in the performance of this specification must be welded into place by CWB-certified welders certified to welding Std. W47.1, Div. 1 and 2.

- 45.3.C.1.2 Prior to any hot work taking place, the Contractor must ensure that the area of work and all equipment, wiring, transits, etc. have been sufficiently protected from any sparks or metal filings. The Contractor must also ensure that the area of work, the system, and the adjacent space is certified as gas free and suitable for hot work as per the Fleet Safety and Security Manual.
- 45.3.C.1.3 The Contractor shall be responsible to ensure that all areas have been thoroughly cleaned and free of any debris resulting from the performance of this specification item.
- 45.3.C.1.4 Contractor must follow existing cable trays throughout the vessel where fitted. Once installed, all cabling must be secured as per TP127.
- 45.3.C.1.5 Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure, and as per ISM fleet safety manual.
- 45.3.C.1.6 Upon final installation, testing must be carried out as per Section 45.2.D.2 Testing/Trials of this document.

**45.3.C.2 Equipment**

- 45.3.C.2.1 Contractor must install the following satellite Iridium equipment:
  - a) Satellite Iridium Antenna ( Thales VesseLink 350) including antenna support supplied by Canada
  - b) Contractor shall install the antenna according to the instruction found in the manual referred to in section 45.2.B.2 (84464-IETM\_VesselLINK\_Install\_Guide\_Rev\_B\_Sept\_2018.pdf)
  - c) Contractor shall apply a paint system in accordance with article 45.1.C.9.

**45.3.C.3 Cables**

- 45.3.C.3.1 Contractor must install the cables listed in **45.3** below and as per guidance drawing.
- 45.3.C.3.2 Contractor must supply and install stamped metal tag on all cables listed in the Table below. Labels must be install at each end of the cable as well as at the entry and exit of any transit they pass through

**Table 45.3**

Cable Label/Type	Source	Destination	Length (m)
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Cable Label/Type	Source	Destination	Length (m)
VSL-1 LMR-600	Electronic workshop (Satellite VesseLink)	Satellite Iridium Antenna VesseLink 350	33m
VSL-2 CAT-6	Electronic workshop (Satellite VesseLink)	Wheelhouse (computer desk)	25m

45.3.C.3.3 Contractor must be responsible for unpacking/repacking all cable transits/glands.

45.3.C.3.4 Contractor is responsible for removing the antenna cable of the previous system. The CCG technician will remove the terminal of the previous system.

45.3.C.4 **Location**

45.3.C.4.1 Rear Mast

45.3.C.4.2 Electronic workshop

45.3.C.4.3 Wheelhouse

45.3.C.5 **Interferences**

45.3.C.5.1 The contractor is responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

45.3.D **Proof of Performance**

45.3.D.1 **Inspection Points**

45.3.D.1.1 ABS class surveyor and the Coast Guard Inspection Authority (CGTA) must be present at the inspection of the work

45.3.D.1.2 A cable which has been installed by the contractor that is found defective (fails a continuity test) or damaged shall be replaced at contractor's expense (material and labor).

45.3.D.2 **Testing/Trials**

45.3.D.2.1 Electronic equipment which has been removed for the performance of this specification must be returned in operational condition. They must be packaged properly and stored in a location determined with the Chief engineer at the time of installation

45.3.D.2.2 Terminations

- a) CCG Technicians will complete the wiring terminations on the system. They must be granted access to the contractor's job site in all time.

45.3.D.2.3 **Commissioning**

- a) CCG Technicians will complete the commissioning on the system. They must be granted access to the contractor's job site in all time.

45.3.D.3 **Certification**

45.3.D.3.1 Certificates in accordance with the Documentation section of the General Notes.

45.3.D.3.2 CCG Technical Authority will complete the certification on this system after system has been installed and commissioned

45.3.D.4 **Documentation**

45.3.D.4.1 A report of the length of the coaxial cable will be produce for the CCG technician

45.3.D.4.2 The contractor shall provide a quality assurance report indicating that the new support and new antenna installation have been inspected by its quality assurance department and that it is properly installed and properly adjusted.

45.3.D.5 **Training[ – Not Used]**

45.3.D.6 **Spares**

45.3.D.6.1 All owner supplied cable which has not been used must be returned to the owner prior to the acceptance of the item.

45.4 **MARINE DIRECTION FINDER RHOTHETA RT-500M (OPTIONAL)**

45.4.A **Identification**

45.4.A.1 The intent of this specification is to install an owner supplied Marine direction finder system. The antenna will be installed on an new structure, provided by the contractor, on top of the foremast and the DCU will be installed at the chart table in the wheelhouse.

45.4.A.2 Contractor must supply all materials and parts required to perform the specified work unless otherwise stated.

45.4.A.3 This work must be carried out in conjunction with the other essential electronic equipment requirements detailed in main specification.

45.4.A.4 CCG Technicians must have access to the yard to proceed with wiring terminations and commissioning.

45.4.A.5 CCG Technicians must be allowed to run short cables, install equipment inside consoles or racks if required during commissioning and troubleshooting.

45.4.A.6 The work in this section is optional.

45.4.B **References**

45.4.B.1 **Equipment Data**

45.4.B.1.1 The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

45.4.B.1.2 The following specific equipment is owner supplied:

- a) Complete Marine Direction Finder system Rhotheta RT-500M

45.4.B.1.3 All new cable are supplied by Canada.

- a) L8620(19T)SFSB-CMG (Multicable)

45.4.B.1.4 All cable supplied by Canada which has not been used must be returned to the owner prior to the acceptance of the item.

45.4.B.2 **Drawings and manuals**

45.4.B.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Document Number	Document Title
LM601-010-AL	Martha L. Black – Antenna Arrangement Drawing
12-9-1-0002-3-1-64	RT-500-M User Manual Issue 20191022 Rev 1.01

45.4.B.3 **Regulations and Standards**

45.4.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
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	Fleet Safety and Security Manual (DFO/5737)	
<b>Publications</b>		
	N/A	
<b>Standards</b>		
TP127E	Ships Electrical Standards	
IEEE 45:2002	Recommended Practice for Electrical Installations on Ships	
70- 000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	
<b>Regulations</b>		
	Canada Shipping Act, 2001	

#### 45.4.C **Statement of Work**

##### 45.4.C.1 **General**

- 45.4.C.1.1 The Contractor must supply all equipment, enclosures, ventilation, staging, chain falls, craneage, slings and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of an adequate safe working load for the expected duties. Any brackets or other welded attachments required in the performance of this specification must be welded into place by CWB-certified welders certified to welding Std. W47.1, Div. 1 and 2.
- 45.4.C.1.2 Prior to any hot work taking place, the Contractor must ensure that the area of work and all equipment, wiring, transits, etc. have been sufficiently protected from any sparks or metal filings. The Contractor must also ensure that the area of work, the system, and the adjacent space is certified as gas free and suitable for hot work as per the Fleet Safety and Security Manual.
- 45.4.C.1.3 The Contractor shall be responsible to ensure that all areas have been thoroughly cleaned and free of any debris resulting from the performance of this specification item.
- 45.4.C.1.4 Contractor must follow existing cable trays throughout the vessel where fitted. Once installed, all cabling must be secured as per TP127.

45.4.C.1.5 Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure, and as per ISM fleet safety manual.

45.4.C.1.6 Upon final installation, testing must be carried out as per Section 45.2.D.2 Testing/Trials of this document.

**45.4.C.2 Equipment**

45.4.C.2.1 Contractor must install the following marine direction finder equipment:

- a) Rhotheta RT-500-M
- b) Contractor shall provide the antenna support like describe in the installation manual and install the new antenna in accordance with manual refered to in section 45.2.B.2 (RT-500-M User Manual Issue 20191022 Rev 1.01.pdf)
- c) Contractor shall apply a paint system in accordance with article 45.1.C.9.

**45.4.C.3 Cables**

45.4.C.3.1 Contractor must install the cables listed in **45.4** below and as per guidance drawing.

45.4.C.3.2 Contractor must supply and install stamped metal tag on all cables listed in the Table 18.3 below. Labels must be install at each end of the cable as well as at the entry and exit of any transit they pass through

**Table 45.4**

Cable Label/Type	Source	Destination	Length (m)
VHF-DF 1 L8620(19T)SFSB- CMG (Multicable)	Wheelhouse (Navigation console)	Foremast	33 m

45.4.C.3.3 Contractor must be responsible for unpacking/repacking all cable transits/glands.

**45.4.C.4 Location**

45.4.C.4.1 Foremast

45.4.C.4.2 Wheelhouse navigation console

**45.4.C.5 Interferences**

45.4.C.5.1 The contractor is responsible for the identification of interference items, their temporary

**45.4.D Proof of Performance removal, storage, and refitting to vessel.**

45.4.D.1 **Inspection Points**

45.4.D.1.1 ABS class surveyor and the Coast Guard Technical Authority (CGTA) must be present at the inspection of the work

45.4.D.1.2 A cable which has been installed by the contractor that is found defective (fails a continuity test) or damaged shall be replaced at contractor's expense (material and labor).

45.4.D.2 **Testing/Trials**

45.4.D.2.1 Electronic equipment which has been removed for the performance of this specification must be returned in operational condition. They must be packaged properly and stored in a location determined with the Chief engineer at the time of installation

45.4.D.2.2 Terminations

a) CCG Technicians will complete the wiring terminations on the system. They must be granted access to the contractor's job site in all time.

45.4.D.2.3 Commissioning

a) CCG Technicians will complete the commissioning on the system. They must be granted access to the contractor's job site in all time.

45.4.D.3 **Certification**

45.4.D.3.1 Certificates in accordance with the Documentation section of the General Notes.

45.4.D.3.2 CCG Technical Authority will complete the certification on this system after system has been installed and commissioned

45.4.D.4 **Documentation**

45.4.D.4.1 The contractor shall provide a quality assurance report indicating that the new antenna installation have been inspected by its quality assurance department and that it is properly installed and properly adjusted.

45.4.D.5 **Training[ – Not Used]**

45.4.D.6 **Spares**

45.4.D.6.1 All owner supplied cable which has not been used must be returned to the owner prior to the acceptance of the item.

