



**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

Bid Receiving
PWGSC
33 City Centre Drive
Suite 480C
Mississauga
Ontario
L5B 2N5
Bid Fax: (905) 615-2095

**LETTER OF INTEREST
LETTRE D'INTÉRÊT**

Comments - Commentaires

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

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
Ontario Region
33 City Centre Drive
Suite 480
Mississauga
Ontario
L5B 2N5

Title - Sujet Ship services for moored buoys		
Solicitation No. - N° de l'invitation K3D33-170129/A		Date 2016-09-15
Client Reference No. - N° de référence du client K3D33-170129		GETS Ref. No. - N° de réf. de SEAG PW-\$TOR-016-7175
File No. - N° de dossier TOR-6-39074 (016)	CCC No./N° CCC - FMS No./N° VME	
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2016-11-04		Time Zone Fuseau horaire Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>		
Address Enquiries to: - Adresser toutes questions à: Grozdanovski, Tase		Buyer Id - Id de l'acheteur tor016
Telephone No. - N° de téléphone (905) 615-2081 ()		FAX No. - N° de FAX (905) 615-2060
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF THE ENVIRONMENT 4905 Dufferin Street Downsview Ontario M3H5T4 Canada		

Instructions: See Herein

Instructions: Voir aux présentes

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

1. THE MAIN OBJECTIVES OF THE REQUEST FOR INFORMATION (RFI)

a) The Government of Canada would like to gauge industry interest in providing information on the provision of ship services for the deployment, retrieval, and maintenance of deep sea moored buoys in the Northeast Pacific Ocean, Atlantic Ocean, Great Lakes and St. Lawrence Estuary, (See Annex A for buoy locations) for the MSC ODAS Buoy program.

The Meteorological Services Canada Branch (MSC), of Environment Climate Change Canada (ECCC), Pacific and Yukon Region, and Quebec-Atlantic Region is seeking a supplier to provide ship services for the ODAS Buoy program. Such services shall include but are not limited to ship services needed for the deployment, retrieval and maintenance of 1.7M Discus, 3M Discus and 6M NOMAD Meteorological Buoys in the North East Pacific Ocean, the Atlantic Ocean, the Great Lakes and St. Lawrence Estuary.

b) Provide industry with an early opportunity to assess and comment on the requirement in order to maximize best value to Canada if a request for Proposal (RFP) is posted.

c) Determine the capability of the supplier community to provide services described in this RFI.

d) Solicit industry knowledge and expertise with regard to best practices that would increase the likelihood of a successful outcome for this project.

e) This RFI may result in the creation of a source list. Therefore, any potential supplier who responds to this RFI will be invited to participate in any future RFP(s) resulting from this process. Participation in this process is not a condition or prerequisite for participation in any RFP(s). Also, the procurement of any of the services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit feedback from industry with respect to its contents.

General Information about requirement

The objective of the offshore moored buoy program is to improve marine weather warnings, forecasts, and sea-state forecasts in the North Eastern Pacific Ocean, the Atlantic Ocean the Great Lakes and St. Lawrence Estuary. The ODAS Buoy program is carried out with a number of moored 1.7M Discus, 3M DISCUS, and 6M NOMAD buoys purchased and maintained by Environment Climate Change Canada.

The buoys have been moored at various locations, with the primary consideration being the impact on wind and sea state forecasts and warnings in the Canadian Exclusive Economic Zone, and particularly coastal waters. Other factors considered were the assertion and maintenance of Canadian sovereignty and the relative costs of deployment and maintenance of the buoys.

2. ADMINISTRATIVE INFORMATION

2.1 Nature and Format of Responses Requested

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

ECCC is not soliciting any technical responses at this time. Any responses will not be formally evaluated. However, any responses received may be used by Canada to develop or modify procurement strategies. Canada will review communications received by the RFI closing date. Canada may, at its discretion, review responses received after the RFI closing date.

2.2 Response Costs:

Canada will not reimburse any respondent for expenses incurred in responding to this RFI.

3. SUBSEQUENT INFORMATION SESSIONS

3.1 Industry Day:

An optional Industry Day will be held at the Environment Canada facility (4905 Dufferin Street, Toronto, Ontario, Canada) on October 18th, 2016 at 10:00 A.M. Participants should arrive at 9:30 A.M. A government issued photo identification (ie. drivers licence, health card, passport, etc.) will be required to be shown for each attendee.

Industry Days are provided to present Industry representatives with information about the Environment Climate Change Canada offshore moored buoy program, an overview of the current business requirements, and its future objectives for the consultative engagement process. Industry days are intended to be open for allowing PWGSC to communicate, with interested suppliers, provide its requirements at a high level, and to allow Industry to ask questions and seek information in order to gain a better understanding of the business needs ECCC.

4. ACTION ITEMS FOR INDUSTRY PARTICIPANTS

Interested participants should complete the following as soon as possible:

Review all documents of this posting;

Provide feedback by e-mail;

Register for Industry Day (Optional) by e-mail.

5. ENQUIRIES

Because this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all potential suppliers. However, respondents with questions regarding this RFI may direct their enquiries to the Contracting Authority.

6. CONTRACTING AUTHORITY

Tase Grozdanovski
Supply Specialist
Public Works and Government Services Canada
33 City Centre Drive, Mississauga, Ontario. L5B 2N5
Canada.
E-mail Address: tase.grozdanovski@pwgsc-tpsgc.gc.ca
Telephone: (905) 615-2081

7. RESPONSES

7.1 Submission of Responses:

Respondents should send responses electronically via e-mail to the Contracting Authority address identified by the date specified on the front page of the RFI.

Documents may be submitted in either official language of Canada.

7.2 Treatment of Responses

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

Review Team. A review team composed of representatives of Canada will review the responses. Canada reserves the right to hire any independent consultant, or use any Government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.

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

8. BUSINESS QUALIFICATION

8.1 Supplier Registrations

To be able to conduct business with the federal government in Canada, you must register in the Supplier Registration Information (SRI) system, a database of registered companies interested in selling to the federal government. By registering in SRI, you make your company's name and supply capabilities widely known to federal departments and agencies, which may use the system to identify sources of supply for the goods and services they buy.

For detailed information and steps on how to register in the SRI database, please refer to the following link:

<https://buyandsell.gc.ca/for-businesses/selling-to-the-government-of-canada/register-as-a-supplier>

9. CLOSING DATE

The Request for Information (RFI) will be open until November 4th, 2016

10. PRIVACY AND CONFIDENTIALITY

This requirement will comply with the statutory obligations under the Privacy Act and the Access to Information Act. In the upcoming information sessions, respondents should mark any portions of their responses that they consider proprietary or confidential. Canada will handle the responses in accordance with the Access to Information Act.

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

11. REGULATORY REQUIREMENTS

Note that responses to the formal RFP will be required to have the flexibility to ensure compliance with Canada's procurement regulatory environment, which may include but is not limited to:

Agreement on Internal Trade (AIT)
Canadian International Trade Tribunal
Federal Accountability Act

Government Contracting Regulations (GCRs)
Financial Administration Act (FAA)
Department of Public Works and Government Services Act
Official Languages Act
Access to Information Act

12. INSURANCE REQUIREMENTS

12.1 Marine Liability Insurance

1. The Contractor must obtain Protection & Indemnity (P&I) insurance that must include excess collision liability and pollution liability. The insurance must be placed with a member of the International Group of Protection and Indemnity Associations or with a fixed market in an amount of not less than the limits determined by the Marine Liability Act, S.C. 2001, c. 6. Coverage must include crew liability, if it is not covered by Worker's Compensation as detailed in paragraph (2.) below.
2. The Contractor must obtain Worker's Compensation insurance covering all employees engaged in the Work in accordance with the statutory requirements of the Territory or Province or state of nationality, domicile, employment, having jurisdiction over such employees. If the Contractor is assessed any additional levy, extra assessment or super-assessment by a Worker's Compensation Board, as a result of an accident causing injury or death to an employee of the Contractor or subcontractor, or due to unsafe working conditions, then such levy or assessment must be paid by the Contractor at its sole cost.
3. The Protection and Indemnity insurance policy must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - b. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Environment and Climate Change Canada and Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.
 - c. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.
 - d. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - e. Litigation Rights: Pursuant to subsection 5(d) of the Department of Justice Act, S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

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

For other provinces and territories, send to:

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

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

12.2 Rigger's Liability Insurance

1. The Contractor must obtain Rigger's Liability Insurance, in an amount usual for a contract of this nature, but for not less than \$1,000,000.00 per accident or occurrence and in the annual aggregate. The Contractor's Riggers Liability Insurance must provide coverage for loss or damage to all Government Property under its care, custody or control, and must be maintained in force throughout the duration of the Contract. The Government Property must be insured on Replacement Cost (new) basis. The Contractor must notify Canada promptly about any losses or damages to Government Property and monitor, investigate and document losses of or damage to ensure that claims are properly made and paid.
2. The Rigger's Liability Insurance policy must include the following:
 - a. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.
 - b. Loss Payee: Canada as its interest may appear or as it may direct, for loss or damage to Government property in the Contractor's care, custody or control.
 - c. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Environment and Climate Change Canada and Public Works and Government Services Canada for any and all loss of or damage to the property however caused.

12.3 All Risk in Transit Insurance

1. The Contractor must obtain on the Government's Property, and maintain in force throughout the duration of the Contract, All Risk Property in Transit insurance coverage for all applicable

conveyances while under its care, custody or control, in an amount of not less than \$500,000.00 per shipment. Government Property must be insured on Replacement Cost (new) basis.

2. Administration of Claims: The Contractor must notify Canada promptly about any losses or damages to Government Property and monitor, investigate and document losses of or damage to ensure that claims are properly made and paid.
3. The All Risk Property in Transit insurance must include the following:
 - a. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority at least thirty (30) days written notice of any policy cancellation.
 - b. Loss Payee: Canada as its interest appears or as it may direct.
 - c. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Environment and Climate Change Canada and Public Works and Government Services Canada for any and all loss of or damage to the property however caused.

12.4 Medical Malpractice Liability Insurance

1. The Contractor must obtain Medical Malpractice Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$1,000,000 per loss and in the annual aggregate, inclusive of the defence costs.
2. Coverage is for what is standard in a Medical Malpractice policy and must be for claims arising out of the rendering or failure to render medical services resulting in injury, mental injury, illness, disease or death of any person caused by any negligent act, error or omission committed by the Contractor in or about the conduct of the Contractor's professional occupation or business of good samaritan acts.
3. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
4. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.

13. NOTE TO INTERESTED SUPPLIERS

This is not a bid solicitation and a contract will not result from this request.

For further information please see Annex A – Statement of Work document.

ANNEX A

STATEMENT OF WORK

FOR MARINE SERVICES TO SUPPORT DEPLOYMENT,

RECOVERY AND MAINTENANCE FOR THE

ENVIRONMENT CLIMATE CHANGE CANADA

METEOROLOGICAL SERVICE CANADA MARINE

NETWORK ODAS BUOY PROGRAM

July 12 2016

1. BACKGROUND:

The objective of the offshore moored buoy program consisting of 50 moored buoys is to improve marine weather warnings, forecasts, and sea-state forecasts in the North Eastern Pacific Ocean, the Atlantic Ocean the Great Lakes and St. Lawrence Estuary. The ODAS Buoy program is carried out with a number of moored 1.7M Watchkeeper, 3M DISCUS, and 6M NOMAD buoys purchased and maintained by Environment Climate Change Canada (ECCC), Meteorological Service Canada (MSC), MARINE network.

The buoys have been moored at various locations, with the primary consideration being the impact on wind and sea state forecasts and warnings in the Canadian Exclusive Economic Zone, and particularly coastal waters. Other factors considered were the assertion and maintenance of Canadian sovereignty and the relative costs of deployment and maintenance of the buoys.

2. SCOPE

The MARINE Network of the Meteorological Services Canada Branch (MSC), of Environment Climate Change Canada (ECCC), Pacific and Yukon Region, and Quebec-Atlantic Region is seeking a supplier to provide ship services for their Moored Buoy program. Such services shall include but are not limited to provision of ships needed for the deployment, retrieval and maintenance of 1.7M Watchkeeper, 3M Discus and 6M NOMAD Meteorological Buoys in the North East Pacific Ocean, the Atlantic Ocean, the Great Lakes and St. Lawrence Estuary. (See Annex C: Environment Climate Change Canada Moored Buoy Network Locations).

3. REQUIREMENTS

General: The contractor must furnish the necessary vessels, personnel, material, equipment, services and facilities (except as otherwise specified) to perform this service. All vessels provided by the contractor must meet the following general requirements.

- **Documentation:** The contractor must provide all documentation required in this Statement of Work (See Appendix A: General Requirements for Charter Vessel Acquisition and Safety).
- **Safety:** The contractor and vessel must meet all safety requirements (See: Appendix A: General Requirements for Charter Vessel Acquisition and Safety).
- **Seaworthiness:** The stability, material condition, means of egress, fire protection, flooding control, lifesaving equipment and emergency power requirements are provided in Appendix A: General Requirements for Charter Vessel Safety Section B (Hull, Mechanical, and Electrical Requirements), paragraphs 1 through 6 and 9. In addition, vessels must be of sufficient size, stability, and maneuverability to safely transit in World Meteorological Organization (WMO) Sea State Code 10 and to conduct all buoy operations in Sea State Code 6 to Sea State Code 10 (See Appendix B WMO Sea State Codes)
- **Navigation:** Navigation equipment requirements are provided in Appendix A: General Requirements for Charter Vessel Acquisition and Safety Section B.7.
- **Communication:** Communications requirements are provided in Appendix A: General Requirements for Charter Vessel Acquisition and Safety, Section B.8. Email and internet capabilities must also be provided. Email must allow attachments up to 4 MB in size. Internet capabilities must provide a minimum data transfer rate of 4096 baud.

- **Habitability:** The government will typically have four (4) personnel aboard the vessel; however, the number of personnel may be as many as eight (8). The vessel must have adequate berthing and messing for all government personnel.
- **Berthing:** Accommodations must be provided in accordance with Appendix A: General Requirements for Charter Vessel Acquisition and Safety Section D.1. Preference will be given to vessels capable of supplying a minimum of one stateroom per two MSC and AXYS personnel. MSC and AXYS personnel must not be berthed with opposite gender or ship's personnel
- **Ship Services:** The vessel must have ship service electrical, potable water, ventilation, heating and cooling, marine sanitation, and pollution control equipment of sufficient capacity to support MSC-authorized personnel and mission-related equipment and activities. All ship service systems, ship equipment, and vital systems, must be operational and maintained in good working order for the duration of the charter.
- **Shipboard cranes:** Shipboard cranes must be used to load and offload MSC equipment while in port. Shipboard cranes must be capable of conducting buoy operations in Sea State Code 6 to Sea State Code 10 (See Appendix B WMO Sea State Codes).
- **Trash:** All debris and trash are the sole responsibility of the vessel contractor. The contractor and not the government, is responsible for all trash and sewage disposal. Such disposal must be in accordance with all applicable laws and regulations.
- **Pressure Washer:** The ship must be outfitted with a high-power pressure washer (greater than 3,000 pounds per square inch) for buoy cleaning and barnacle removal.

Personnel-Qualifications and Conduct:

Qualifications: Licensing and related credentials that demonstrate crew member qualifications are required in accordance with the vessel's Certificate of Inspection or regulations applicable to the vessel's size, type, and service.

Support to MSC Operations: The contractor must provide at least five (5) ship's crew including but not limited to a boatswain, winchman (crane operator) and three (3) deckhands trained and experienced (minimum of 1 year experience) in operation of the shipboard equipment, including crane and A-frame, and offshore deployment operations at all times during MSC operations. This is in addition to the crew required for the safe operation of the zodiac. The contractor must also provide personnel to assist with buoy cleaning, barnacle removal, on buoys. While in port, the contractor must provide sufficient personnel to assist in loading and offloading of MSC equipment.

Port Services: The contractor must provide all port services, including, but not limited to harbor pilots, dockage, customs, agents, shore ties (i.e. water, electrical and sewage), line handlers, and forklifts.

Mobilization: The contractor must provide all labor and materials for securing all government equipment for sea travel including but not limited to deck tie-downs (d-rings), chains, chain binders, ratchet straps, and shackles. The list of government equipment that will be mobilized aboard the vessel will be provided in the request for proposals for the each task authorization.

Specific Requirements: The vessels must meet the following requirements for each program.

Intermediate Class Vessel Requirements:

- **Range / Endurance:** The vessel must have a minimum range of 4,000 nautical miles at cruising speed and minimum endurance of 28 days.
- **Equipment:** The vessel must be outfitted with the following equipment:
- **Crane:** The vessel must have a shipboard working deck crane that meets the following requirements.
 - A knuckle boom or derrick style crane is preferred.
 - A minimum lifting capacity of 60,000 lbs or 3 cranes with a 20 ton, 8 ton and 5 ton capacity respectively , and located in the immediate vicinity of the buoy working deck area must be required to safely lift, recover, and deploy buoys, moorings, and anchors while at sea.

This crane must be capable of reaching the edge of the ship in order to hang the anchor for each deployment. The crane must be capable of lifting the buoy safely and subsequently placing it clearly over the side of the vessel and into the water. The crane must also be capable of recovering a buoy from the sea and safely returning it to the buoy working deck area. The Government requires that the crane be integral to the vessel structure (integral pedestal mounted knuckle boom crane or integral pedestal mounted fixed or articulating boom crane or derrick crane). For the purpose of this contract, integral means that there is permanent, welded crane support structure which is permanently affixed to the deck and structure of the ship and is identified in the vessel's working plans (drawings) and that there is an installed crane of the type specified herein on that permanent structure certified by American Bureau of Shipping (ABS) or equivalent certification. Portable cranes, mobile cranes, or other temporary installations which are not documented in the vessels approved stability documentation will not be considered to meet this requirement. The pedestal must have sufficient height above the working deck so as to limit extreme vertical boom angles when lifting a buoy or other suspended heavy loads. The vessel must be capable of conducting buoy deck operations in WMO Sea State code 6 to 10 (See Appendix B WMO Sea State Codes).

- **Capstan/Cross Deck Winch:** The unit must have a line pull capacity of 10,000 lbs. and not less than 40 feet per minute minimum continuous line speed.
- **Small Boat:** The vessel must have a small, powered boat, Rigid Hull Inflatable (RHI) or equivalent for use in conducting buoy servicing with a minimum capacity of four persons (includes Coxswain).

Vessel Spaces:

- **Buoy Working Deck Area:** The working deck will be used for buoy servicing operations and buoy component storage. The entire working deck area, if non-contiguous, must be clearly accessible by the vessel crane identified and capable of hoisting any of the buoys without the need to disconnect, reposition, or transfer loads from one lifting apparatus to another prior to deployment or recovery operations. The vessel must have a minimum clear working deck area of 5,000 square feet, a minimum loading capacity of 800 lbs. per square foot, and have a minimum of 80 tie-downs rigging points installed with a load capacity of at least 3,000 pounds. The vessel must have sufficient pad eyes or hold downs on the deck to accommodate equipment for transit and to conduct operations; the vessel will provide chains, binders and strapping to adequately secure all gear and equipment securely for the voyage. The entire working deck must have sufficient lighting to be able to read documents (with font size 12 text 1/8 inch height), during night time operations if required. The stern section or a portion of one side of the vessel must be free of bulwarks and obstructions to accommodate the deployment of the buoys and moorings. The edge of the deck that runs along this section should not be sharp; if necessary, a section of pipe, cut in half, will need to be installed to prevent chaffing of the

mooring line. The vessel and load handling equipment must be capable of conducting deck operations in WMO Sea State 4 (See Appendix B WMO Sea State Codes).

- **Dry Storage:** The vessel must have a minimum area of 200 square feet for MSC equipment storage that is not subject to weather exposure.

Personnel Required:

- **Boat Coxswain:** The contractor must provide at least one trained and experienced (minimum of 1 year desired) boat operator to operate the contractor-furnished small boat.

Global Class Vessel Requirements:

- **Range / Endurance:** The vessel must have a minimum range of 6,200 nautical miles at cruising speed and minimum endurance of 35 days.
- **Equipment:** The vessel must be outfitted with the following equipment.
- **Crane:** A knuckle-boom type crane is preferred. The crane must have a minimum capacity of 40,000 pounds. The maximum reach must extend to the entire working deck space, and to the stern A-frame. If this crane does not reach the entire working deck space, then the contractor must have additional crane or equipment to be able to position a 10,000 pound load anywhere on the working deck area and be able to transfer it beneath the stern A-frame. The crane must also have the capability to deploy or recover a buoy from the water without use of the A-frame. The Government requires that the crane be integral to the vessel structure (integral pedestal mounted knuckle boom crane or integral pedestal mounted fixed or articulating boom crane). For the purpose of this contract, integral means that there is permanent, welded crane support structure which is permanently affixed to the deck and structure of the ship and is identified in the vessel's working plans (drawings) and that there is an installed crane of the type specified herein on that permanent structure certified by American Bureau of Shipping (ABS) or equivalent certification. Portable cranes, mobile cranes, or other temporary installations which are not documented in the vessels approved CCG stability documentation will not be considered to meet this requirement. The vessel must be capable of conducting buoy deck operations in Sea State 4.
- **Stern A-Frame:** The vessel must have a stern-mounted A-frame that meets the following requirements.
 - Safe working load: 20,000 lbs.
 - Sheave travel: 12 ft. forward of the transom to 12 ft. aft of the transom
 - Vertical clearance: 28 ft. between cross member and deck
 - Horizontal clearance: 15 ft. between legs at deck, 12 ft. between legs at cross member
- **Horizontal Capstan:** The vessel must have a minimum of two horizontal capstans installed on or adjacent to the working deck of the vessel. These winches must have a two-speed, reversing motor with minimum capacity of 10,000 pounds at a line speed of 33 feet per minute and 2,500 pounds at a line speed of 132 feet per minute. The drum must have minimum diameter of 18 inches.
- **Transom:** The working deck must be no more than 6 feet above the design waterline. The vessel transom must be smooth and free of sharp edges and have no gaps larger than one-half inch. A vessel with a functional stern roller is preferred.

- **Deck Winch:** The vessel must have a winch with a minimum bear-drum capacity of 12,000 pounds. The winch must have a minimum diameter of 18 inches. The winch must be installed with a fleet angle of no more than 5 degrees with the sheave on the A-frame.

Navigation: The vessel must have the following navigational equipment and capability.

Dynamic Positioning (DP): The vessel must have a minimum of Dynamic Positioning Class 1 (DP-1), as classified by the International Maritime Organization.

CTD Winch: The vessel must have a minimum of one Markey Model DESH-5 or equivalent Conductivity, Temperature and Depth (CTD) Winch capable of a maximum pull of 7,000 pounds at mid-scope and a drum capacity of 1,000 meters of 0.322 inch diameter conductor cable.

Vessel Spaces:

Deck Storage: The vessel must have clear deck space for the following equipment:

- One (1) NOMAD Buoy
- Three (3) ODAS 3MDiscus Buoys
- Up to five (5) anchors (3 4t serrated, 1 3t serrated, 1 3t flat concrete)
- Two (2) large mooring boxes (ea. Box 100" x 64" x 64")
- Three (3) shallow mooring boxes
- mooring chain (~ 9 shots)
- Ten (10) equipment boxes (ea. 34" x 18" x 15")
- Seven (7) equipment pallets incl. CO2 Purging equipment

All storage areas must be accessible by ship cranes operational staging.

Buoy Working Deck Area:

The vessel must have a minimum contiguous 30' x 20' clear area for buoy servicing operations at the stern of the vessel directly adjacent to the A-frame. The working deck will be used for buoy servicing operations and buoy component storage. The vessel must have a minimum clear working deck area of 5,000 square feet, a minimum loading capacity of 800 lbs. per square foot, and have a minimum of 80 tie-downs rigging points installed with a load capacity of at least 3,000 pounds. The vessel must have sufficient pad eyes or hold downs on the deck to accommodate equipment for transit and to conduct operations; the vessel will provide chains, binders and strapping to adequately secure all gear and equipment securely for the voyage. The entire working deck must have sufficient lighting to be able to read size 12 text (1/8 inch height), during night time operations. The stern section or a portion of one side of the vessel must be free of bulwarks and obstructions to accommodate the deployment of the buoys and moorings. The edge of the deck that runs along this section should not be sharp; a section of pipe, cut in half, will need to be installed to prevent chaffing of the mooring line. The vessel and load handling equipment must be capable of conducting deck operations in WMO Sea State code 6 to 10 (See Appendix B WMO Sea State Codes).

Buoy Preparation Area. The vessel must have a 12' x 25' clear area that is accessible by the ship crane for transfer to and from the buoy working area.

Secure Inside Storage Area. The contractor must provide a minimum area of 60 square feet on the vessel for MSC equipment storage that is not subject to weather exposure.

Personnel:

Chief Boatswain: The contractor must provide at least one person trained and experienced in small boat operations (minimum of one year experience desired), and operation and safety of all deck equipment.

Medical Person In-Charge (MPIC): The contractor must provide a dedicated Medical Person in Charge (MPIC) must be trained in advanced trauma care, advanced first aid and CPR to a level equivalent to the standards defined in International Code of Standards of Training, Certification & Watch-keeping, as amended (STCW-95). All vessels must be outfitted with a first aid kit and medical supplies commensurate with the level of expertise of medical personnel onboard, and the personnel must be able to treat cardiac arrest, spinal injuries, severe burns and bleeding, broken bones, and asphyxia. There must be a designated location on the vessel to store supplies and to serve as a medical space to treat illnesses and injuries. The MPIC is also to serve as the primary safety watch during vessel and mission operations and must stand observational safety watch during all major mission activities.

4.0 VERIFICATION

Documentation Review: The contractor must provide the documentation required in Appendix A: General Requirements for Acquisition and Safety, for review by the government within 10 days after receipt of the task authorization. In addition, the contractor must provide a written statement of commitment and reservation of a vessel, capable of the requirements in this statement of work with each task authorization.

5.0 PERFORMANCE ISSUES

Off Charter - Mechanical Breakdowns or Non-Performance of Vessel, Captain or Crew: The contractor is responsible for maintaining all contractor-provided equipment and vessels in a safe operating condition during the contract performance. If a mechanical breakdown of the vessel or other contractor-provided equipment occurs that is greater than 12 hours cumulative within a 24-hour period that begins at 0700 and ends at 0659, the following day, the vessel and all Contractor-provided equipment must be considered off charter for the purposes of billing. The contractor must also prorate a credit to the government for fuel consumed during those periods.

The charter must also be considered off charter for the purposes of billing if the Captain or Crew of the boat is unable to perform the duties as outlined in the Statement of Work in increments of time > 12 hours cumulative within a 24-hour period that begins at 0700 and ends at 0659, the following day. The Contractor must make every reasonable effort to solve the problem causing the vessel, Contractor-provided equipment or Captain and Crew to be out of service and bring the vessel back into service as quickly as possible to continue contract performance.

Mechanical breakdown periods in excess of four (4) consecutive or four (4) cumulative days may be grounds for termination of the task authorization. In the event that the breakdown requires the vessel to return to port for repairs, the vessel will not be considered back on charter for billing purposes until the vessel returns to the site where the vessel originally went off charter.

Weather Related Issues: If severe weather-related conditions result in the vessel being tied up to a pier at port, then the standby vessel day rate will apply.

APPENDIX A
GENERAL REQUIREMENTS
FOR CHARTER VESSEL ACQUISITION AND SAFETY

A. Administrative and Related Requirements

1. Charter vessels must carry documentation applicable to the vessel's size, type, and service
2. Charter vessel operators must carry insurance that is customary and reasonable for the duration and area of operation of the charter to indemnify and save harmless the government in case of any damage or loss occurring either directly or indirectly as a result of the charter, except to the extent that there is negligence on the part of the government. Charter vessel owners must provide an Insurance Certificate prior to notice to proceed. Vessel operators must carry Protection and Indemnity (P&I) insurance that covers the issuance of the vessel crew and MSC- authorized complement. Specific coverage amounts and related issues must be addressed in all charter contracts.

B. Hull, Mechanical, and Electrical Requirements

1. **Stability**: All vessels chartered by MSC must have stability information and instructions derived based on tests and calculations, in a format required by regulation applicable to the vessel's size, type, and service.

a. Vessels must have, as a minimum, a Stability Letter that reflects the vessel's current configuration and intended service, signed by a qualified individual (a recognized naval architect or naval architecture firm having been trained in and having experience in matters of stability calculations) certifying that the vessel meets intact stability requirements, taking into account the loading, over-the-side lifting, and at-sea conditions under which the vessel will reasonably be expected to operate during the charter. The stability letter must contain instructions and guidance for the vessel's operating personnel intended to maintain satisfactory vessel stability and must include information regarding loading constraints and operating restrictions under varying conditions. Vessels 79 feet or less, for which regulatory stability evaluation criteria is not available or applicable, may provide evidence that stability has been evaluated by a qualified individual using best available data in lieu of an official Stability Letter required by regulation.

b. All vessels chartered by MSC must have and must maintain stability information aboard the vessel. All vessels chartered by MSC must be operated in accordance with the vessel's stability instructions and guidance.

2. **Material condition, structural, and watertight integrity**: All vessels chartered by MSC must be maintained in a seaworthy condition.

a. All vessels must possess one or more of the following documents, reflecting the vessel's current configuration, as evidence of the vessel's material condition, structural, and watertight integrity: current vessel classification, SOLAS Safety Construction (SLC) Certificate, Loadline Certificate, or equivalent applicable Classification Society documents; or evidence of dry-docking examination, or underwater survey in lieu of dry-docking, and an internal structural examination, twice within all previous five-year periods with no more than three years between any two examinations and more frequently if required per regulations relevant to the size, age and use of the vessel from a recognized marine surveying company certifying the vessel's structural and watertight integrity.

3. **Means of escape:** Aboard all vessels chartered by MSC there must be two identified escape routes from all general areas. At least one of these two means must be independent of watertight hatches and doors, except for quick-acting watertight hatches and doors giving final access to weather decks.

4. **Fire protection:** All vessels chartered by MSC must have in place fully functional fire protection systems and equipment, such as portable and semi-portable fire extinguishers, fire pumps, fire mains, fixed gas extinguishing systems, and fire detection and alarm systems in accordance with vessel or SOLAS requirements.

a. Vessels with the following capabilities or any combination thereof are favorable: a self-priming power-driven fire pump connected to a fixed fire main piping system with a sufficient number of hydrants to reach any part of the vessel with a single length of fire hose; a fixed, gaseous fire extinguishing system(s) that serves engine compartments, machinery spaces, and other spaces where flammable liquids are stored; a grease extraction hood and extinguishing system that serves galley cooking equipment; or a fire detection and alarm system or an independent modular smoke detector or fire detecting unit located in each accommodation space.

b. All fire protection equipment and system components installed aboard chartered vessels, and the installation details of those systems, must meet SOLAS approval requirements as evidenced by a current and valid inspection or SOLAS certificate.

5. **Flooding control:** All vessels chartered by MSC must have in place fully functional bilge piping systems, pumps, and alarms in accordance with SOLAS requirements for a vessel of its size, type, and service. Vessels that have the following capabilities are desired: at least two means of dewatering the vessel's watertight compartments (other than tanks and those considered small buoyancy compartments), of which one means is a fixed self-priming power driven pump permanently connected to a fixed bilge piping system; visual and audible high water alarms located on the bridge for spaces having through hull fittings below the waterline (for spaces subject to flooding from seawater piping within the space and for spaces having non-watertight closure); and a visual indicator on the bridge indicating when an automatic bilge pump (if fitted) is operating.

6. **Lifesaving equipment:** As a minimum, vessels chartered by MSC must be outfitted with the following lifesaving equipment.

a. All vessels chartered by MSC must carry survival craft of aggregate capacity to accommodate at least 100% of the number of persons permitted to be aboard. Survival craft must meet SOLAS (Safety of Life at Sea) regulations based on vessel size, type, construction, and area of operation. For operations outside the Maritime Boundary Line, survival craft must be outfitted with SOLAS A pack (See Appendix D: SOLAS Pack A contents) for ocean service. All survival craft must be stowed so as to float free and inflatable survival craft must automatically inflate in the event the vessel sinks. Each survival craft and stowage arrangement must meet SOLAS maintenance, servicing, and certification requirements as evidenced by a current and valid SOLAS certification. The expiration date of survival craft inspection and certification must not be exceeded during the charter period.

b. All vessels chartered by MSC must carry at least one Type I personal floatation device (PFD) for every person on board. Vessels chartered by MSC operating seaward of the Maritime Boundary Line and north of 32 degrees north latitude or south of 32 degrees south latitude must also carry at least one immersion suit for each person on board. The immersion suits and PFDs must be of proper size and fit and must be outfitted with ancillary equipment required by CCG or equivalent regulations such as a light, a whistle, and reflective materials. The suits and PFDs must be marked in accordance with CCG or equivalent regulations, must be stowed in locations accessible to working and berthing areas, and must be maintained in good working order and condition.

c. All vessels chartered by MSC must carry at least one Category 1, 406 mHz, emergency position-indicating radio beacon (EPIRB) of the type that is automatically activated and stowed to meet float-free arrangement requirements. EPIRBs must be currently registered per Search and Rescue Satellite (SARSAT) program and must be tested in accordance with SOLAS regulations and manufacturer's recommendations. EPIRBs that

fail testing must be serviced and repaired or replaced. The expiration date of EPIRB battery and hydro test date must not be exceeded.

d. All vessels chartered by MSC must carry distress signaling devices of the type and quantity required by SOLAS regulations. As a minimum, all vessels must carry at least three parachute flares, six hand held flares, and three smoke signal flares. Distress signaling devices must be serviceable and properly stowed and marked.

7. Navigation equipment requirements: All vessels chartered by MSC must meet SOLAS requirements and international navigational rules with respect to navigational safety, including a ship's whistle, a ship's bell, navigation lights and navigation signaling devices. All vessels chartered by MSC must be outfitted with a fixed magnetic compass and deviation table, two RADARs, or one RADAR, and one electronic chart/tracking system, and a fixed electronic positioning system in accordance with SOLAS requirements for inspected vessels. Aboard vessels employing a one-person bridge watch, a tamper-resistant audible watch or bridge alarm in the wheelhouse is required with an activation cycle not to exceed 15-minute intervals during the charter.

8. Communications: All vessels chartered by MSC must have at least one VHF radio and one SSB radio. A single radio transceiver meeting frequency requirements of the VHF and SSB radios may be acceptable in lieu of two separate radios. If a single radio transceiver is used, then another means of communication, e.g., a cellular telephone or satellite communication system that is operational throughout the vessel's area of operation, must also be available. Vessels operating more than 200 nm from shore must have satellite communication capability, e.g., INMARSAT.

a. All vessels chartered by MSC must be equipped with a general alarm system capable of being activated from the bridge for notifying individuals in any accommodation or work space in case of fire, abandon ship, or emergency in accordance with current SOLAS regulations. An alternate means of notifying embarked personnel may be used in lieu of a general alarm system, provided it meets the intent of the requirements of a general alarm system.

b. Vessels that have a fixed telephone system, public address system, or hand held radios, that permit clear and audible two-way communication between persons on the bridge and persons located at interior work stations or at on-deck working areas are favorable.

9. Emergency power: All vessels chartered by MSC must have an emergency source of electrical power, independent of the main source of electrical power, to provide power to emergency loads in accordance with SOLAS requirements for a vessel of its size, type, and service. As a minimum, vessels chartered by MSC must have a means to provide emergency power to the following equipment: emergency lighting, navigation equipment, navigation lights, and general alarm systems (where fitted), and emergency communication systems and equipment. The emergency source of electrical power must be capable of supplying connected emergency loads continuously for at least three hours and must be located in a space or locker other than the main machinery space. Batteries of sufficient size and capacity may serve as an adequate source of emergency power.

10. Pollution control: All vessels chartered by MSC must meet applicable international, federal, provincial, and local pollution control laws and regulations. Vessels must be outfitted and operated in accordance with applicable CCG and IMO regulations for the control of pollution by air emissions, sewage, oil, trash and garbage.

C. Operational Safety Requirements

1. Vessel staffing: Minimum staffing levels must be in accordance with the vessel's Certificate of Inspection (COI), when applicable.

a. In the absence of a COI that specifies minimum staffing levels, the vessel must be sufficiently staffed to safely and efficiently navigate, operate, perform engineering duties, maintain the vessel, provide food and berthing services, and provide mission-related deck operations and assistance described in the charter vessel statement of work. The requirements of the International Code on Standards for Training, Certification, and Watch keeping for Seafarers as amended (STCW-95) must be met regarding work hours and rest periods aboard vessels to which they apply.

b. As a minimum, aboard vessels in which STCW-95 requirements do not apply, a two-watch system must be in place for navigational watches on charters greater than 12 hours in duration. A navigational watch must be maintained at all times while the vessel is at sea. No crew member must be required to work continuously in excess of 12 hours at any given time on any given day. Under normal operating scenarios, all crew members must be provided at least two rest periods per 24- hour period, one of which must be at least six continuous hours in duration.

c. Exceptions to these requirements are permitted in case of emergencies related to saving the vessel, and those on board, or saving life at sea. In addition, work hour requirements may be adjusted under non-routine circumstances if deemed necessary and agreed upon by the captain and chief scientist (or field party chief) provided that the changes do not violate applicable STCW-95 regulations.

2. Crew qualifications: In addition, the requirements of STCW-95 must be met for vessels to which they apply.

a. Vessel operators must be licensed and must have license endorsements to the appropriate level of vessel tonnage, area of operation, manner of propulsion, and number of MSC-authorized personnel on board. Aboard vessels for which licenses are not required, in lieu of a master's license, the vessel's captain is required to have a minimum of three years' experience as a captain relevant to the nature and complexity of the planned operation. All watch standers in charge of a navigational watch must have a minimum of three years' experience aboard vessels equivalent to the vessel being chartered. All persons standing a navigational watch must be familiarized and trained regarding the operation and use of navigational equipment incidental to their duties aboard the vessel being chartered.

3. Safety briefing, emergency instructions, and drills: Prior to the beginning of a cruise, and also when new personnel embark, an orientation must be conducted for -authorized personnel and crew by the vessel's captain or the captain's designee (who themselves have been trained and are qualified in accordance with SOLAS regulations) in matters related to the vessel's safety, firefighting, and lifesaving equipment capabilities, assigned responsibilities, and emergency procedures. Muster lists, station bills, safety information, and written emergency procedures must be posted and provided in accordance with SOLAS regulations.

- a. The following SOLAS drills are required either prior to departure but no later than 24 hours after departure, weather permitting, in accordance with the requirements of Code of Federal Regulations (CFR) Title 46 Part 199.180 or equivalent.

<https://www.law.cornell.edu/cfr/text/46/199.180>

Section b) Familiarity with Emergency Procedures: section 2 and section 3.

Section c) Drills-general section I through 4.

Section d) Abandon Ship Drills section 1 (I through vii).

4. Nautical charts and publications: Vessels chartered by MSC must have, as a minimum, one of each chart that covers the vessels' area of operation corrected through the most current *Notice to Mariners*. Vessels must also carry copies of the Canadian Coast Pilot, local tide and tidal current tables in covered areas, and Inland Navigation Rules and International Rules of the Road. Vessels may choose to use approved, up-to-

date, electronic charts and publications in lieu of paper charts. If relying on electronic charts, the vessel must have on board a set of paper charts necessary to navigate safely to a port near the vessel's area of operation.

5. Equipment tests: In preparation for getting underway, the captain must ensure that visual inspections and operational tests of onboard systems and equipment deemed to be critical to the safety of the vessel are conducted, such as steering gear, propulsion engines (ahead and astern), the vessel's whistle, navigational equipment, and emergency communication equipment. In addition, while underway, all vessels must conduct periodic tests of critical safety equipment. A checklist of required tests must be maintained on the bridge and entries must be made in the vessel's log to document safety equipment testing. Vessel equipment and systems must be operational for the duration of the charter.

6. Voyage plans and communication requirements: Prior to departure, a voyage plan must be provided by MSC Program Officials to the contractor detailing the anticipated route, schedule, and itinerary the vessel will follow. In addition, a list of crew members and MSC-authorized personnel aboard with names and emergency contact information must be provided and exchanged. The vessel must communicate regularly with MSC Program Officials regarding the status of the cruise and regarding any changes to scheduled voyage plans.

D. General Health and Safety

1. Accommodations: All vessels chartered by MSC must be outfitted with accommodations for MSC-authorized personnel at least equivalent to that which is minimally required for crew members and in keeping with good marine practice. For overnight cruises, as a minimum, an individual bunk and locker must be provided for each MSC-authorized person unless mutually agreed upon arrangements are made between MSC authorized personnel and the vessel operator. An adequate number of staterooms, heads and showers must be provided to accommodate gender differences and total number of persons aboard to the greatest extent possible. All living and working spaces, including galleys, mess rooms, heads, showers, berthing spaces, passageways, lounges, recreation areas, store rooms, and laboratory spaces, must be free of pests and vermin and must be maintained in a clean and sanitary condition for the duration of the charter.

2. Ship services: The vessel must have ship service electrical, potable water, ventilation, heating and cooling, marine sanitation, and pollution control equipment of sufficient capacity to support MSC-authorized personnel and mission-related equipment and activities. All ship service systems, ship equipment, and vital systems, must be operational and maintained in good working order for the duration of the charter.

3. Medical capabilities and services: First aid equipment and training must be in accordance with regulations and STCW-95 requirements applicable to the vessel based on its size, type, and service.

a. As a minimum, all vessels chartered by MSC must have at least one person aboard that is currently trained in elementary first aid, CPR, and Automated External Defibrillator (AED) use. CCG-approved courses include those offered by the Canadian Red Cross and the Canadian Heart and Stroke Association.

b. All vessels must be outfitted with a first aid manual, a complete first aid kit, an AED, and medical supplies commensurate with the number of persons aboard and level of expertise of medical personnel. All vessels must have a designated and readily accessible location to store medical supplies and to serve as a medical station to treat illnesses and injuries.

c. In the event the contractor medical personnel become unable to perform their duties, MSC-authorized personnel may be used to temporarily fulfill medical qualifications and medical service requirements until the next port-of-call is reached.

GENERAL REQUIREMENTS
FOR CHARTER VESSEL ACQUISITION AND SAFETY CHECKLIST

This checklist is a compilation of safety related requirements identified in the General Requirements.

Description **Y/N** **Notes**

Required Documentation - Vessels under 300 GRT		
Vessel Certificate of Documentation		
Certificate of Inspection, Vessel Safety Examination Decal, or Letter of Inspection		
Stability evaluation report (or Stability Letter/Booklet)		
Vessel hull and material condition report		
Vessel description, general arrangements, and history of vessel alterations, if any		
Master and Mate(s) qualifications and experience		
Station Bill for fire, emergencies, and abandon ship		
Pollution prevention placards for oil and trash		
Certificate of Insurance		

Required Documentation - Vessels 300 GRT and over		
Vessel Certificate of Documentation		
Certificate of Inspection		
Stability Booklet		
Vessel hull and material condition report		
Vessel description, general arrangement drawings, and record of vessel alterations		
Master, Mates, and Engineers licenses, qualifications, and experience		
STCW Training Certificates		
Station Bill for fire, emergencies, and abandon ship		
Pollution prevention placards and plans		
Certificate of Insurance		

Additional Documentation		
Vessel Classification		required if over 300 GRT and beyond 200nmi
Loadline Certificate		required if over 500 ITC and on international voyage
SOLAS Certificates (SLC, SLE, SLR)		required if over 500 ITC and on international voyage
Pollution prevention record books		required if over 400 GRT
International Oil Pollution Prevention Certificate		required if over 400 GRT and on international voyage

Required Documentation -Vessels 500 ITC and over on an international voyage		
Vessel Certificate of Documentation		
Certificate of Inspection		
Stability Booklet		
Vessel hull and material condition report		
Vessel description, general arrangement drawings, and record of vessel alterations		
Loadline Certificate		
Vessel Classification		

SOLAS Certificates (SLC, SLE, SLR)		
International Oil Pollution Prevention Certificate		
Pollution prevention placards and plans		
Pollution prevention record books		
Master, Mates, and Engineers licenses, qualifications, and experience		
STCW Training Certificates		
Station Bill for fire, emergencies, and abandon ship		
Certificate of Insurance		

Minimum safety related equipment and capabilities - All Vessels greater than 65 feet in length		
Survival craft of sufficient capacity to accommodate all on board and outfitted with SOLAS A pack if operating beyond boundary line		
Survival craft arrangements, and current inspection status, IAW regulations		as evidenced by current and valid inspection
Immersion suits and Type I personal floatation devices for all on board outfitted with light, whistle and reflective material		Immersion suit requirement does not have to be made to apply if area of operation is above or below 32 degrees latitude
At least one registered certified Category 1, 406 mHz EPIRB not exceeding battery expiration and testing dates		
Emergency signaling devices – at least 3 parachute flares, 6 hand held flares, 3 smoke signal flares		expiration dates not to be exceeded
Means to alert those on board of fire, emergency, or abandon ship preferably by general alarm or public address system		
At least two means of navigation including magnetic compass with deviation table, and a combination of either two RADARs or one RADAR and one fixed electronic positioning system		
Navigation lights, ship's whistle, ship's bell		
Navigational charts and publications and/or electronic system(s), software, and data in electronic format appropriate to the area of operations		A set of paper charts is required to be aboard for navigating vessel back to port
Automated bridge watch alarm		aboard vessels employing a one-person bridge watch
At least two means of communications, ship to shore, e.g., VHF/SSB in combination with a Cell and/or Sat phone		
Emergency power generator or emergency power batteries in an enclosed space or locker not located in the main machinery space.		
Two routes of escape from all general living and working areas		
Firefighting systems and equipment appropriate to vessel size and type IAW regulations		as evidenced by current and valid inspection
Dewatering systems and equipment appropriate to vessel size and type IAW regulations		as evidenced by current and valid inspection
Vessel staffing in accordance with COI or, in lieu of COI, staffing level that meets operational needs and provides for adequate rest periods		

First aid kit with medical supplies at a designated first aid station and AED		
Two persons trained in elementary first aid and CPR one of which also trained in advanced first aid, CPR, and AED use		

Optional* safety-related capabilities - Uninspected vessels		
*Required of vessels 300 GRT and over, i.e., inspected vessels, and all vessels with more than 6 in the scientific party and on an overnight voyage		
Fixed fire pump and fire main		
Fixed fire extinguishing system serving engine compartment, machinery spaces, and paint locker if fitted		
Fire Suppression hood(s) serving galley equipment		
Fire detection and alarm system		
Two means of dewatering all watertight compartments one of which may be portable		
High water bilge alarm system		
Vessel staffing level and qualifications IAW STCW requirements, or meeting the intent of STCW requirements, in which at least 10 hours of rest per day, 6 hours of which must be continuous, is provided		

APPENDIX B WMO SEA STATE CODES:

Beaufort Code

Code	Appearance of sea if fetch and duration of the blow have been sufficient to develop the sea fully	Description
00	Sea like a mirror	Calm
01	Ripples with the appearance of scales are formed, but without foam crests	Light air
02	Small wavelets; crests have a glassy appearance and do not break	Light breeze
03	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses	Gentle breeze
04	Small waves, becoming longer; fairly frequent white horses	Moderate breeze
05	Moderate waves; many white horses are formed (chance of some spray)	Fresh breeze
06	Large waves; white foam crests everywhere (probably some spray)	Strong breeze
07	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind	Near gale
08	Moderately high waves; edges of crests begin to break into the spindrift; foam is blown in well-marked streaks along the direction of the wind	Gale
09	High waves; dense streaks of foam along wind; crests begin to topple, tumble and roll over; spray may affect visibility	Strong gale
10	Very high waves with long overhanging crests; foam in great patches blown in dense white streaks along wind; sea surface takes a white appearance; tumbling becomes heavy and shock-like; visibility affected	Storm
11	Exceptionally high waves (medium sized ships may be lost to view behind waves); sea covered with long white patches of foam lying along the wind; everywhere edges of crests are blown into froth; visibility affected	Violent storm
12	Air is filled with foam and spray; sea completely white with driving spray; visibility seriously affected	Hurricane

NODC Code Table 1555: Wave height (modified from WMO code table 1555)

Code	Meaning
0	Calm
1	0.5 meter
2	1 meter
3	1.5 meter
4	2 meter
5	2.5 meter
6	3 meter

7	3.5 meter
8	4 meter
9	4.5 meter
10	5 meter
11	5.5 meter
12	6 meter
13	6.5 meter
14	7 meter
15	7.5 meter
16	8 meter
17	8.5 meter
18	9 meter
19	9.5 meter
20	10 meter
21	10.5 meter
22	11 meter
23	11.5 meter
24	12 meter
25	12.5 meter
26	13 meter
27	greater than 13 meters

https://www.nodc.noaa.gov/woce/woce_v3/wocedata_1/woce-uot/document/wmocode.htm

APPENDIX C
Environment Climate Change Canada MSC
Moored Buoy Network

WESTERN BUOY LOCATIONS

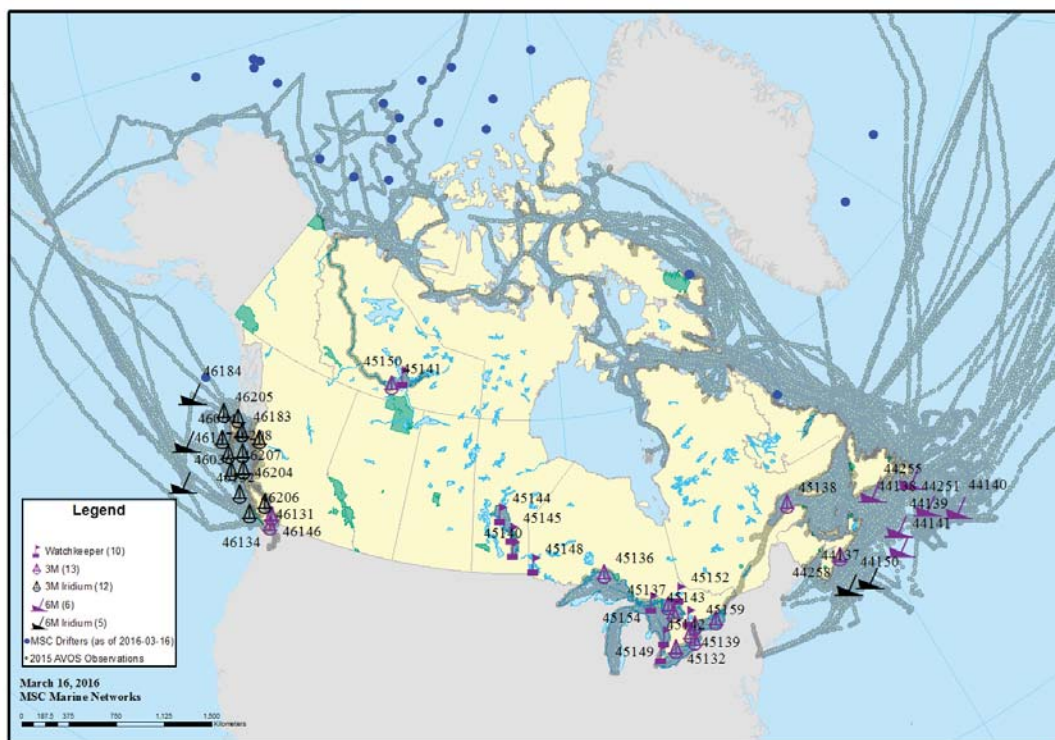
WMONO.	NAME	TYPE	LAT/LONG
46004	Middle Nomad	6N	50.97N/135.80W
46036	South Nomad	6N	48.35N/133.92W
46131	Sentry Shoal	3D	49.91N/124.98W
46132	South Brooks	3D	49.73N/127.92W
46145	Central Dixon Entrance	3D	54.38N/132.43W
46146	Halibut Bank	3D	49.34N/123.73W
46147	South Moresby	3D	51.82N/131.20W
46181	Nanakwa Shoal	3D	53.83N/128.83W
46183	North Hecate Strait	3D	53.62N/131.10W
46184	North Nomad	6N	53.90N/138.87W
46185	South Hecate Strait	3D	52.41N/129.78W
46204	West Sea Otter	3D	51.37N/128.75W
46205	West Dixon Entrance	3D	54.17N/134.33W
46206	La Perouse Bank	3D	48.84N/126.00W
46207	East Dellwood	3D	50.86N/129.91W
46208	West Moresby	3D	52.50N/132.20W

EAST PACIFIC BUOY LOCATIONS

WMONO.	NAME	TYPE	LAT/LONG
44137	East Scotia Slope	6N	42.15N/61.60W
44138	SW Grand Banks	6N	44.15N/55.38W
44139	Banquereau Bank	6N	44.14N/57.62W
44140	Tail of the Bank	6N	42.52N/57.62W
44141	Laurentian Fan	6N	42.60N/57.58W
44150	La Have Bank	6N	42.30N/64.11W
44251	Nickerson Bank	6N	46.27N/53.24W
44255	NE Burgeo Bank	6N	47.16N/57.20W
44258	Halifax Harbour	3D	44.30N/63.24W

CENTRAL CANADA BUOY LOCATIONS

WMONO.	NAME	TYPE	LAT/LONG
45132	Port Stanley	3D	47.28N/81.13W
45135	Prince Edward Pt	3D	43.47N/76.52W
45136	Slate Island	3D	48.32N/124.98W
45137	Georgian Bay	3D	45.33N/81.09W
45138	Mont Louis	3D	49.32N/65.43W
45139	West Lake Ontario	3D	43.15W/79.32W
45140	Lake Winnipeg S. Basin	WK	50.47N/96.44W
45141	Great Slave Lake	3D	61.11N/115.19W
45142	Port Colborne	3D	42.44N/79.17W
45143	South Georgian Bay	3D	44.57N/80.38W
45144	Lake Winnipeg N	WK	53.14N/98.17W
45145	Lake Winnipeg Narrows	WK	51.52N/96.58W
45147	Lake St. Clair	WK	42.26N/82.41W
45148	Lake of the Woods.	WK	49.39N/94.30W
45149	S .Lake Huron (Bayfield)	WK	43.33N/82.45W
45150	Great Slave Lake N.	WK	61.59N/114.77W



Canada

APPENDIX D SOLAS PACK A CONTENTS

Emergency pack and equipment contents

A-PACK/A-PAKKE:

EU Marine Directive (marked with the wheel)/(markeret med skibsrat)

SOLAS 74/83 (86)

SOLAS 74/95

SOLAS 74/96

Emergency pack:

Nødpakke:

Raft Size / Flådestørrelse	NON SOLAS											
	4	6	8	10	12	16	20	25	35	50	51	101
Contents / Indhold												
Parachute rocket signals / Faldskærmsraketter	4	4	4	4	4	4	4	4	4	4	4	4
Hand flares / Håndblus	6	6	6	6	6	6	6	6	6	6	6	6
Signalling lamp / Signallampe	1	1	1	1	1	1	1	1	1	1	1	1
Batteries (spare) / Batterier (reserve)	2	2	2	2	2	2	2	2	2	2	2	2
Bulb (spare) / Pære (reserve)	1	1	1	1	1	1	1	1	1	1	1	1
Whistle / Fløjte	1	1	1	1	1	1	1	1	1	1	1	1
Signalling mirror / Signalspejl	1	1	1	1	1	1	1	1	1	1	1	1
Emergency ration kg. / Nødration kg.	2	3	4	5	6	8	10	12,5	17,5	25	25,5	50,5
Drinking water (litr) / Drikkevand (litr)	6,5	9,5	12,5	15,5	18,5	24,5	30,5	38	53	79	79	158
Drinking cup / Drikkebeholder	1	1	1	1	1	1	1	1	1	1	1	1
Safety tin opener / Dåseåbner (sikkerheds)	3	3	3	3	3	3	3	3	3	3	3	3
Fishing tackle / Fiskegrej	1	1	1	1	1	1	1	1	1	1	1	1
First aid kit / Medicinskiste	1	1	1	1	1	1	1	1	1	1	1	1
Anti-seasickness tablets / Søsøgepiller	24	36	48	60	72	96	120	150	210	300	306	606
Bailer / Øsekar	1	1	1	1	1	1	1	1	1	1	1	1
Sponges / Svampe	2	2	2	2	2	2	2	2	2	2	2	2
Instructions for survival (per language)	1	1	1	1	1	1	1	1	1	1	1	1
Overlevesvejledning (pr. sprog)	1	1	1	1	1	1	1	1	1	1	1	1
Table of life-saving signals (per language)	1	1	1	1	1	1	1	1	1	1	1	1
Redningssignaltavle (pr. sprog)	1	1	1	1	1	1	1	1	1	1	1	1
Sea anchor & cord / Drivanker	1	1	1	1	1	1	1	1	1	1	1	1
Seisssors / Saks	1	1	1	1	1	1	1	1	1	1	1	1
Smoke signals / Røgsignaler	2	2	2	2	2	2	2	2	2	2	2	2
Seasickness bags / Søsøgeposer	4	6	8	10	12	16	20	25	35	50	51	101
Rescue bags / Redningsposer (TPA)	2	2	2	2	2	2	2	3	4	5	6	11
* Knife (buoyancy) / Kniv (flyde) (DK+ - DKF+)	-	-	-	-	-	1	1	1	1	1	1	1
* Knife (buoyancy) / Kniv (flyde) (DK - DKF)	-	-	-	-	-	-	-	-	-	-	-	-

Equipment:

Udstyr:

Operational instructions / Brugsanvisning	1	1	1	1	1	1	1	1	1	1	1	1
Bailer / Øsekar	-	-	-	-	-	1	1	1	1	1	1	1
Sea anchor & cord / Drivanker	1	1	1	1	1	1	1	1	1	1	1	1
* Knife (buoyancy) / Kniv (flyde) (DK+ - DKF+)	1	1	1	1	1	1	1	1	1	1	1	1
* Knife (buoyancy) / Kniv (flyde) (DK - DKF)	1	1	1	2	2	2	2	2	4	2	2	2
Paddles (set of 2) / Padler (sæt af 2)	1	1	1	1	1	1	1	1	1	1	1	1
Repair kit / Reparationssæt	1	1	1	1	1	1	1	1	1	1	1	1

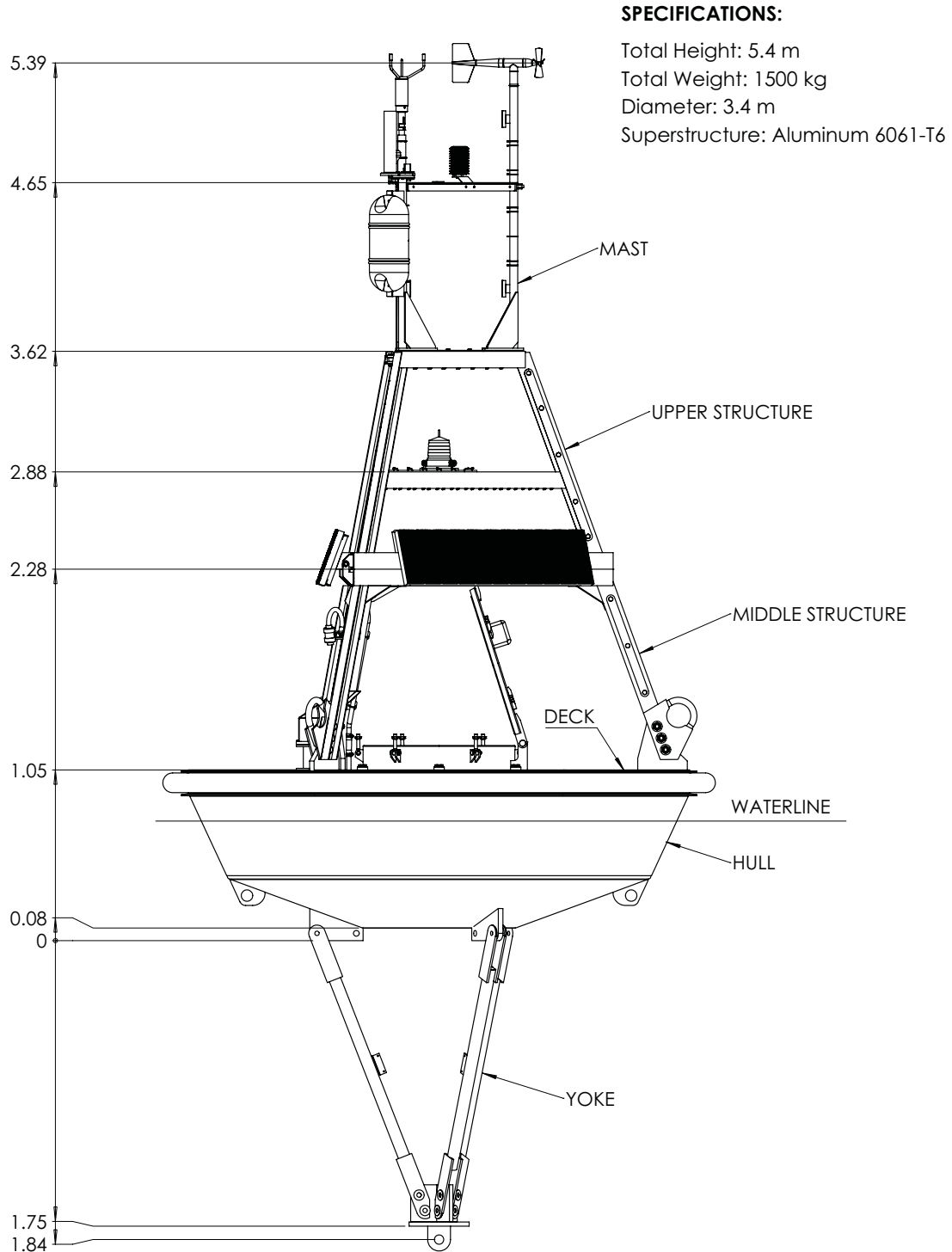
APPENDIX E: Buoy and Mooring Specification Diagrams

See attached.

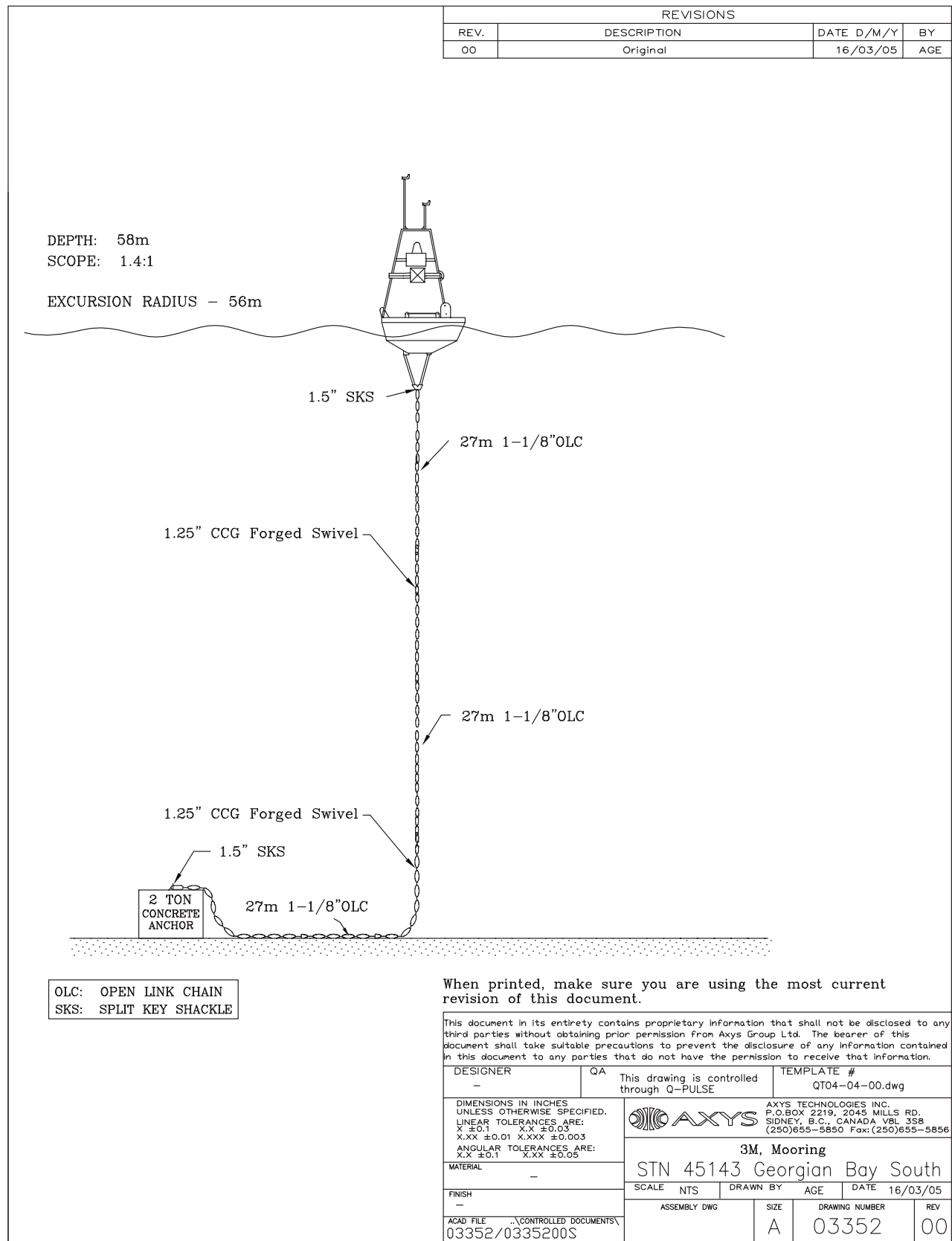
AXYS ENVIRONMENTAL SYSTEMS

3 METRE MET OCEAN BUOY

METEOROLOGICAL AND OCEANOGRAPHIC PLATFORM



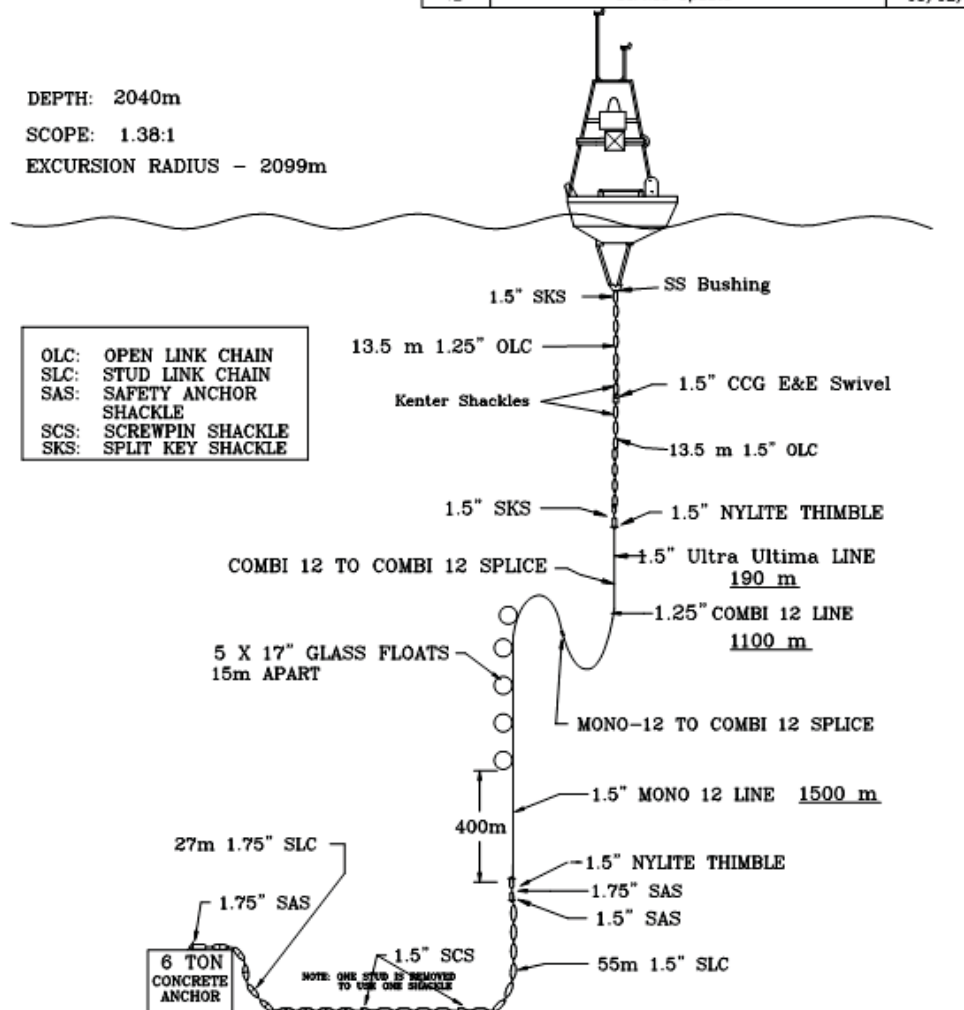
DIMENSIONS ARE IN METRES



REVISIONS			
REV.	DESCRIPTION	DATE D/M/Y	BY
1	Original	10/06/96	AGE
2	Service Update	05/07/96	AGE
3	Service Update	08/09/97	
10-11	Updated template, layers, numbering. Removed parts	25/05/01	AD
	Service Update		AGE
12	Service Update	05/02/04	RKK


DEPTH: 2040m
SCOPE: 1.38:1
EXCURSION RADIUS - 2099m

OLC: OPEN LINK CHAIN
SLC: STUD LINK CHAIN
SAS: SAFETY ANCHOR
SHACKLE
SCS: SCREWPIN SHACKLE
SKS: SPLIT KEY SHACKLE



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DESIGNER	QA	This drawing is controlled through Q-PULSE		TEMPLATE #	QT04-04-00.dwg
DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED. LINEAR TOLERANCES ARE: X ±0.1 X.X ±0.03 X.XX ±0.01 X.XXX ±0.003 ANGULAR TOLERANCES ARE: X.X ±0.1 X.XX ±0.05		 AXYS TECHNOLOGIES INC. P.O. BOX 2219, 2045 MILLS RD. SIDNEY, B.C., CANADA V8L 3S8 (250)655-5850 Fax: (250)655-5856			
MATERIAL		3M, Mooring Station 46132, South Brooks			
FINISH		SCALE	NTS	DRAWN BY	RKK
ACAD FILE		ASSEMBLY DWG	SIZE	DRAWING NUMBER	REV
01261\0126112S.dwg			A	01261	12
		DATE 05/02/04			

AXYS ENVIRONMENTAL SYSTEMS

6 METRE NOMAD BUOY

METEOROLOGICAL AND OCEANOGRAPHIC PLATFORM

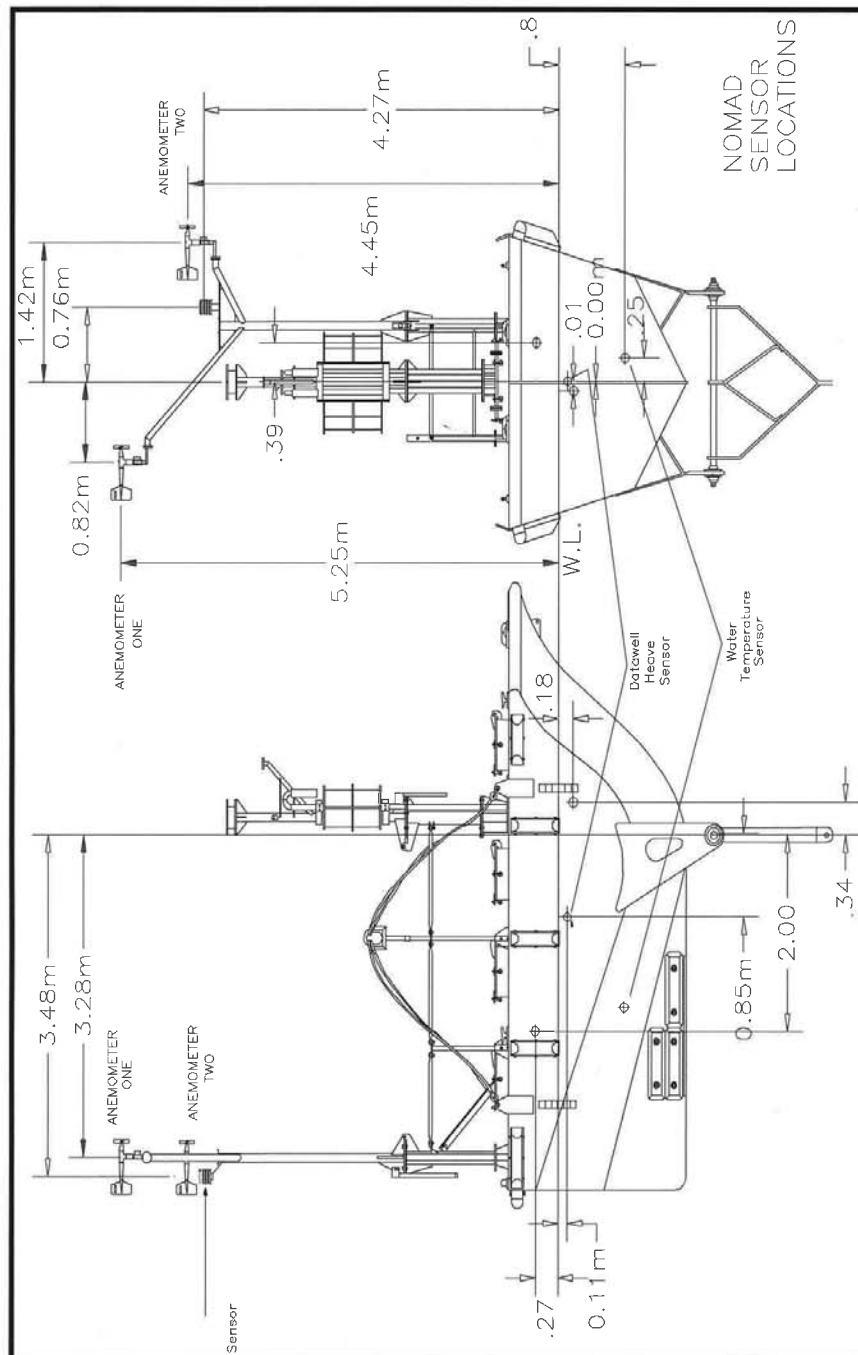
SPECIFICATIONS:

Dimensions: 6m length x 3.1m width x 9m height

Weight (not including ballast): 5200 kg

Ballast: Up to 1360 kg lead keel ballast. Up to 2720 kg lead internal ballast.

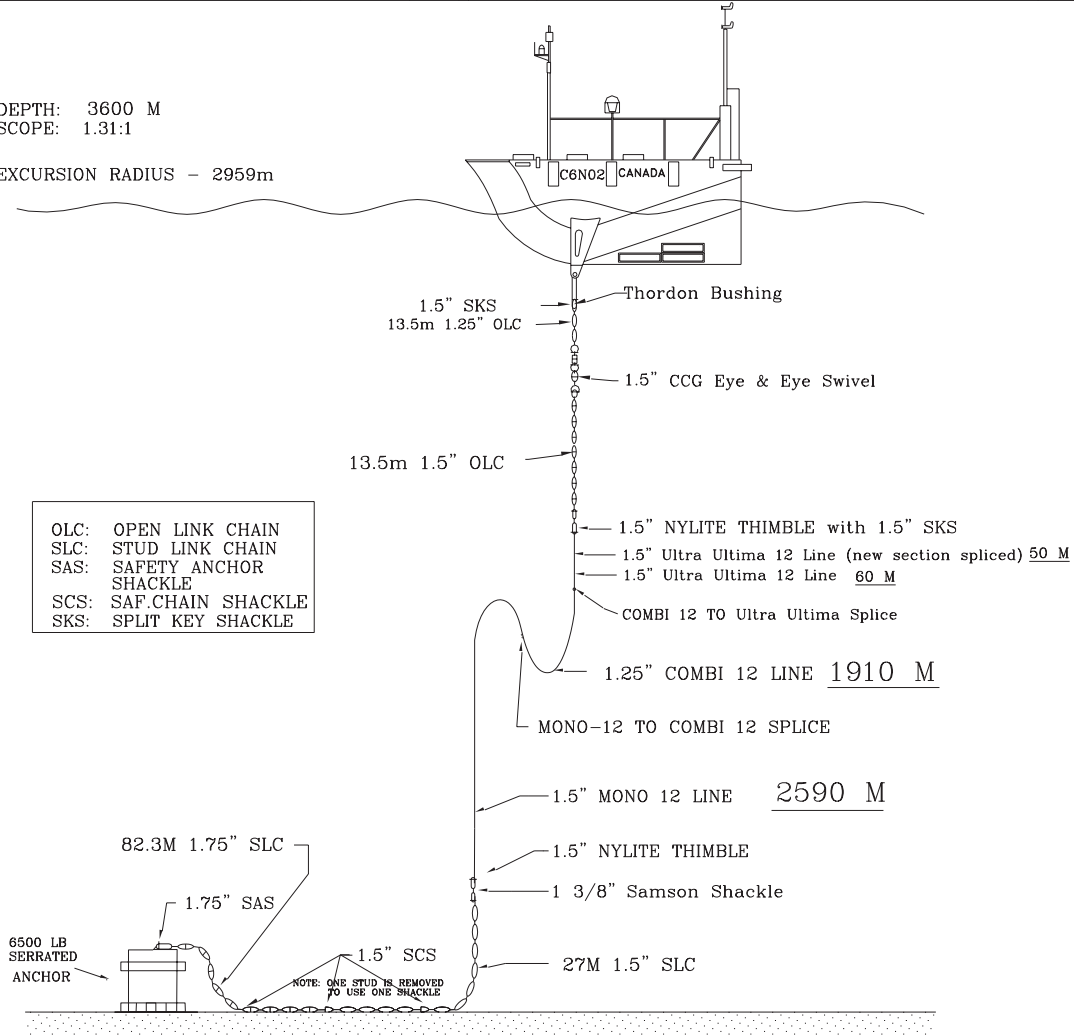
Hull: Welded aluminum



REVISIONS				REVISIONS			
REV.	DESCRIPTION	DATE D/M/Y	BY	REV.	DESCRIPTION	DATE D/M/Y	BY
11	Service Update	05/02/04	RKK	1	Original	05/07/96	AGE
12	Service Update	23/03/08	AGE	2	Service Update	05/11/98	AGE
				3	Service Update	16/10/00	AGE
				10	Updated template, layers, numbering. Removed parts Service Update	25/05/01	AD AGE


DEPTH: 3600 M
SCOPE: 1.31:1

EXCURSION RADIUS - 2959m



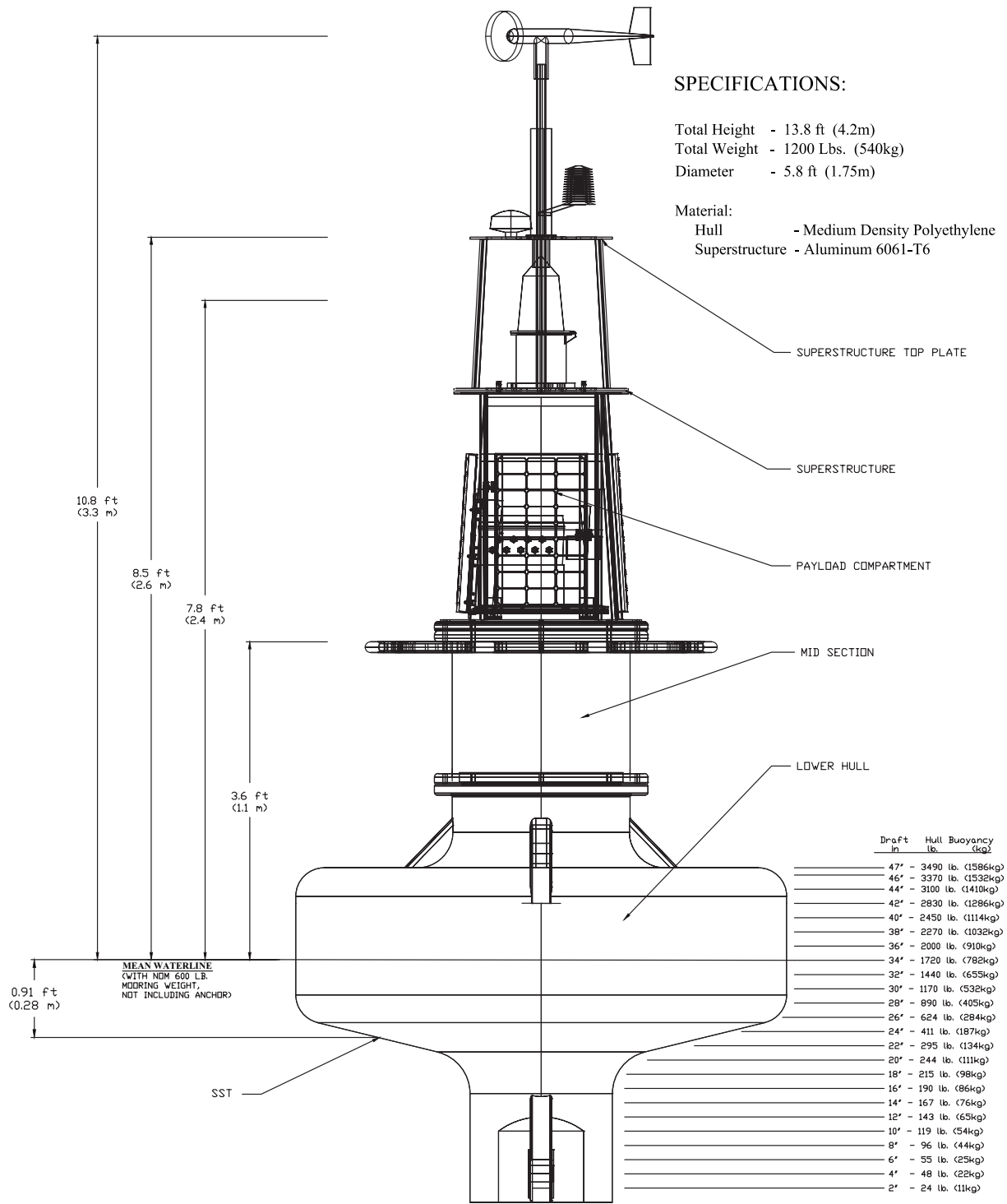
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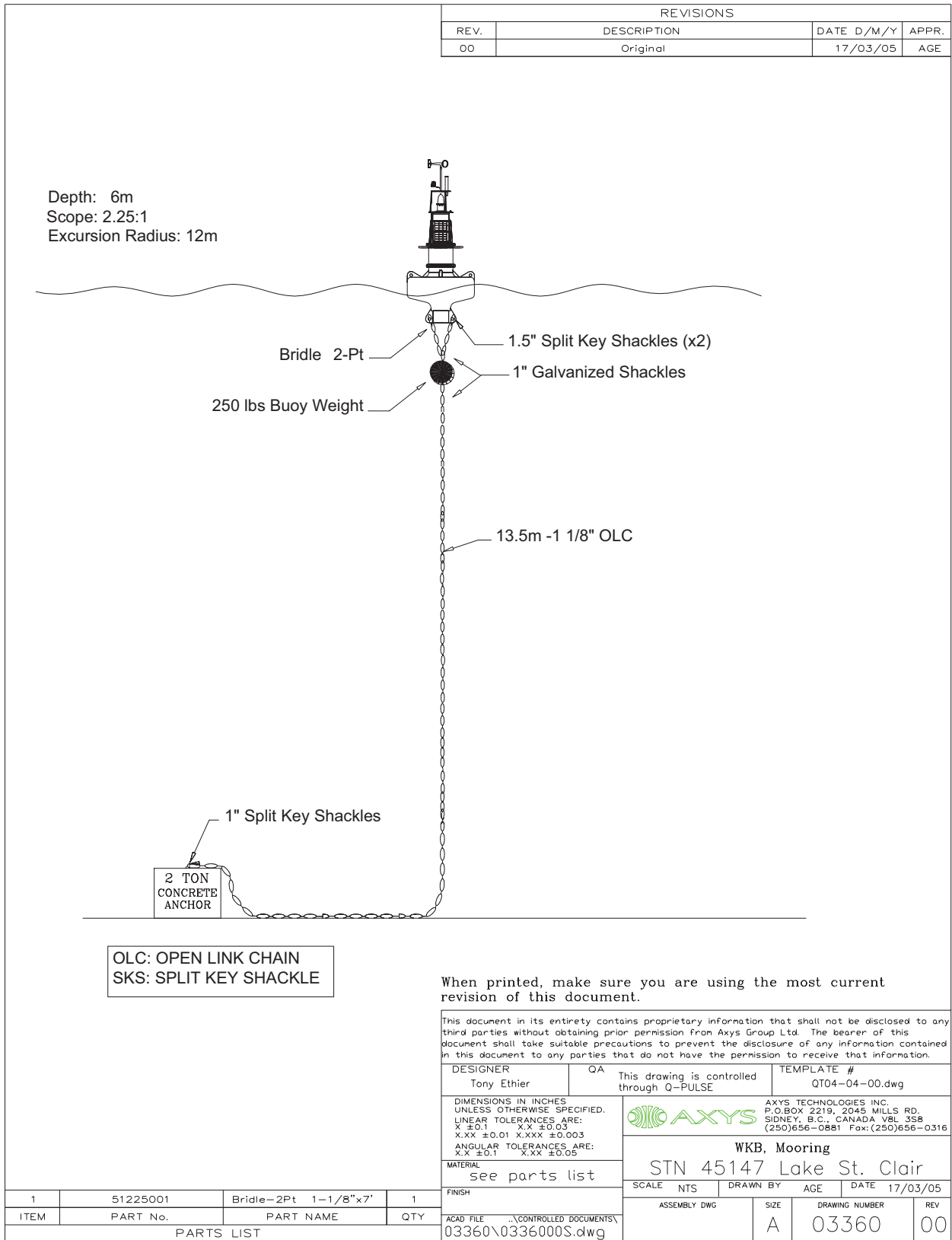
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DESIGNER	QA	This drawing is controlled through Q-PULSE	TEMPLATE #	QT04-04-00.dwg
DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED: LINEAR TOLERANCES ARE: X ±0.1 X.X ±0.03 X.XX ±0.01 X.XXX ±0.003 ANGULAR TOLERANCES ARE: X.X ±0.1 X.XX ±0.05	 AXYS TECHNOLOGIES INC. P.O. BOX 2219, 2045 MILLS RD. SIDNEY, B.C., CANADA V8L 3S8 (250)655-5850 Fax: (250)655-5856			
MATERIAL	NOMAD, Mooring			
FINISH	Station 46004, Middle NOMAD			
ACAD FILE	..\\CONTROLLED DOCUMENTS\\01247\\0124712S.dwg	SCALE	NTS	DRAWN BY
		ASSEMBLY DWG	SIZE	RKK
			DRAWING NUMBER	DATE
			A	23/03/08
			01247	REV
				12

AXYS ENVIRONMENTAL SYSTEMS

WATCHKEEPER™ BUOY Meteorological And Oceanographic Platform





REVISIONS			
REV.	DESCRIPTION	DATE D/M/Y	APPR.
00	Original	17/03/05	AGE

Depth: 58m
Scope: 2.5:1
Excursion Radius: 121m

OLC: OPEN LINK CHAIN
SKS: SPLIT KEY SHACKLE

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DESIGNER Tony Ethier	QA This drawing is controlled through Q-PULSE	TEMPLATE # QT04-04-00.dwg
DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED. LINEAR TOLERANCES ARE: X ±0.1 X.X ±0.03 X.XX ±0.01 X.XXX ±0.003 ANGULAR TOLERANCES ARE: X.X ±0.1 X.XX ±0.05		<p style="font-size: 0.8em; margin-top: 5px;"> AXYS TECHNOLOGIES INC. P.O. BOX 2219, 2045 MILLS RD. SIDNEY, B.C., CANADA V8L 3S8 (250)656-0881 Fax: (250)656-0316 </p>
MATERIAL see parts list		

WKB, Mooring	
STN 45149 Bayfield	
SCALE NTS	DRAWN BY AGE DATE 17/03/05
ASSEMBLY DWG	SIZE DRAWING NUMBER REV <div style="display: flex; justify-content: space-around; font-size: 1.2em;"> A 03359 00 </div>