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Department of Environment

Ministère de l’Environnment

FRV Nuliajuk

Scientist Orientation

Updated: March 25, 2016

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Welcome,
You are receiving this information as a member of the research team using the *FRV Nuliajuk* (http://env.gov.nu.ca/node/123) this field season. This document will provide some general information related to the vessel’s scientific offer, its policies and your responsibilities as a scientific team member on board the vessel.

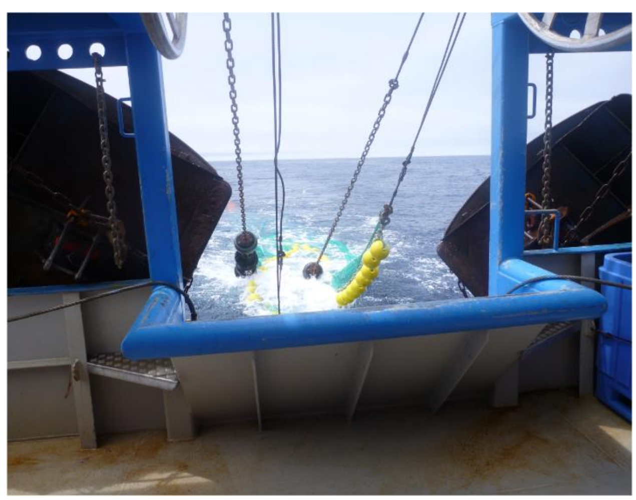
The *FRV Nuliajuk* was commissioned in 2011 and was built to support science-based conservation and sustainable development of Nunavut Fisheries. The vessel is dually mandated to support community participation in fisheries, support poverty reduction and provide valuable training to Inuit. For researchers, it serves as a state-of-the-art, built-for-purpose platform for Arctic research that includes a wide variety of scientific equipment, an experienced crew and many safety features.

The vessel’s policies and protocols are refined on an ongoing basis to optimize the safe and efficient operation of vessel, the programs it supports and to compliment the vessel’s mandate. This requires the cooperation of crew and research teams and considerable planning to overcome the logistical challenges faced when working in the Arctic. Our past experience shows that such cooperation and team building fosters successful research, facilitates knowledge and cultural transfer between Inuit and researchers and ensures that the field season is as comfortable and pleasant as possible for all involved.

Vessel

The *FRV Nuliajuk* is a Canadian built (2011) 19.5m state-of-the-art research vessel owned operated by the Government of Nunavut.

The vessel is used for fisheries, oceanographic, hydrographic, environmental and other forms of scientific research in the Arctic. It can operate without resupply for 1-2 weeks (depending on fuel consumption) producing its own electricity and freshwater. The main working deck is partially sheltered with a fully enclosed heated combination wet/dry lab.



Operational equipment includes:

- Campelen 1200 research trawl,
- Side hauler (for trawl lines or crab pots),
- Power block,
- CTD Winch,
- Deck crane
- 17’ Zodiac (90hp, 10 person capacity)
- 14’ Zodiac (30hp, 6 person capacity).

More details about the *FRV Nuliajuk’s* specifications are provided in Appendix A and the vessel’s layout is provided in Appendix B.

Scientific Equipment

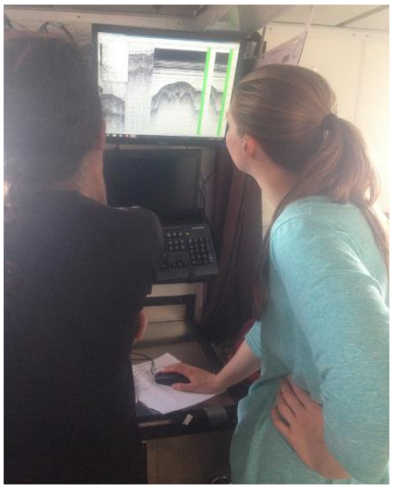
The bridge of the vessel is well equipped for research activities. Equipment includes:

- Acoustic Doppler Current Profiler
- Weather station
- Forward looking sonar
- Multi-beam sonar
- Radar
- Scan-Mar Trawl sensors
- Communications to the back deck and wet lab
- Redundant navigation systems/plotters
- Satellite Communication
- Wireless internet
- Printer/photocopier

Note that while the vessel can provide access to GPS inputs, researchers should plan to have their own gear with which to interface with the GPS (plot waypoints etc.). The vessel's plotters are considered safety equipment and should not be tampered with.

The vessel offers multiple work platforms. The primary platform is the back deck, which provides access to the stern trawl, starboard hauler and CTD. This deck is also in close proximity to the wet/dry lab, which contains:

- Dedicated storage lockers and cabinets,
- Sink with fresh water,
- Stainless steel working surfaces,
- Freezer,
- Portable fume hood, and
- Laptop computer connected to the local area network.



The vessel is also equipped to conduct activities from both zodiacs, which provide easier access to the water surface, shallow habitats and more distant destinations. The large Zodiac is equipped with GPS, and Navionics navigation apps are newly available for both craft via portable iPad units.

Communications

The vessel is fitted with two satellite communication stations providing controlled access to telephone, internet and e-mail. Consult the contractual agreement you have with the Government of Nunavut to determine what you may use for onboard business. Phone cards may be purchased from *Atlantic Electronics Limited* for personal use of the phone, ask for details once on board.

The vessel telephone number that may be used for emergency contact is 870773159791 which must be preceded by 011 when dialing from a land line. A personal E-mail address will be provided once onboard.

Amenities

The vessel has accommodation arrangements for nine people across three cabins. One single occupancy cabin is assigned to the captain. Another cabin has two beds, and a single forward cabin sleeps six people. Each cabin has its' own sink with storage cabinets, work desk with computer and limited drawer and closet space for personal items. Bedding and towels are provided. It is recommended that you transport your personal items in collapsible luggage for ease of storage.

There are two washrooms, one shower, and one laundry washer/dryer onboard. The vessel is fitted with two reverse osmosis plants which produces fresh water for cooking and cleaning. There is limited storage capacity, so please be conservative with water use while on board.

There is a galley, complete with cooking facilities that you would find in your own home. Meals are prepared by the ship’s crew with meal times built around the daily operation. Any dietary concerns, including food allergies, need to be communicated to the vessel prior to arrival and preferably prior to the commencement of the summer field season. Your assistance in keeping the area clean and tidy is appreciated.

The eating and entertainment area (messroom) has sitting capacity for eight. There is a television, DVD player with a large selection of movies, and satellite radio.

Electrical outlets are standard North American with 110v supply. No adapters are available on board.

Tools
The vessel is well equipped with common power tools. These are available for use upon request to the crew. For any special tools, inquire with the crew before departure to Nunavut.

Crew
The standard crew compliment for the vessel is five: the captain, first mate and three deck hands. Inuit beneficiaries always make up a portion of the crew, which can also include trainees.
Two crew must remain on duty at all times. Therefore, for general daytime research activities only three crew are available (including the captain tasked with controlling the vessel). The remaining crew on shift are available to assist with research activities when not otherwise occupied with regular duties (e.g. vessel operations, maintenance, cooking etc.).

Safety

The safety of crew and passengers are the priority in the vessel's operations. This is reflected in the policies, protocols and equipment that have been put in place to mitigate risk. These policies are outlined in detail in the vessel's Health and Safety Plan, located on the bridge (electronic copies are also available on request).

Safety aboard the vessel is everyone's responsibility and any unsafe activity, equipment or situations should be reported and dealt with immediately.

The *FRV Nuliajuk* offers a wide variety of scientific tools to conduct research. Some of this equipment (e.g. trawls, winches and haulers) is extremely powerful and can cause serious injury or death if proper precautions are not followed. As a result, only trained personnel, designated by the captain, can operate or be in the vicinity of such operating equipment. Equipment and off limits areas will be discussed during vessel orientation, however, if in doubt, ask the captain.

Personal protective equipment (PPE) is an important part of mitigating risk of injury. Some of this equipment is available on board while other equipment is the responsibility of the researcher. PPE available on board the vessel include:

- Life jackets
- Personal Flotation Devices (PFDs),
- Protective eyewear,
- Hearing protection,
- Hard hats and gloves.

PPE required of researchers but not provided includes:

- Safety boots,
- Cold weather clothing,
- Wet weather clothing, and
- Specialized safety equipment for your research.

The vessel is certified by Transport Canada and is fitted with approved emergency safety equipment. Each member of the ship's complement is provided with a SOLAS lifejacket and cold water immersion suit. Your lifejacket is kept above your bed and all immersion suits are kept in a

dedicated storage locker on the top deck. In addition to your personal equipment, the vessel is fitted with the following equipment for crew use:

- Two 10 person SOLAS Liferafts, complete with a type A emergency pack,
- A 6 person rescue boat,
- One 12 person emergency boat,
- One Daecon rescue scoop,
- Lifebuoys,
- An EPIRB,
- Two SARTs,
- Signaling flares,
- Fire extinguishers,
- Fire stations,
- Fixed engine room suppression system, and
- Fume hood,
- Chemical storage cabinet for chemicals.

Once on board, you will be familiarized with the safety equipment and your responsibilities during normal daily operations and emergencies. The following are basic safety rules:

- PFD is to be worn at all times when working on the open deck in open waters and when in an inflatable boat,
- Safety shoes with soft soles are to be worn at all times when working on deck,
- Gloves are to be worn at all times when handling rope and bait,
- Safety glasses are to be worn at all times when working with liquid and powder chemicals.

It is very important that you are proficient in donning your lifejacket and immersion suit. Training will be provided upon joining the vessel. The captain will conduct a fire and emergency drill monthly or whenever a significant change of personnel has occurred.

Fire and Lifesaving plans are posted, please take a few minutes to get familiar with the general layout of the vessel and location of equipment.

The vessel is equipped with approved first aid kits. A certified Marine Advance First Aid Attendant is on board at all times. It is your responsibility to bring any required prescription or over-the-counter medications you may need (for example: motions sickness pills).

To ensure a safe workplace and compliance with the Marine Occupational Health and Safety Regulations, you must ensure that all controlled substances brought onboard are declared with the captain and are accompanied by a MSDS. A copy will be kept at the WHMIS station located in the Lab.

It is the responsibility of the scientist to bring all required specialty safety gear (for example: nitrile gloves) required to handle project chemicals. It is also the responsibility of the head scientist to remove all chemicals brought onboard the vessel at the end of the deployment or trip.

Due to the operation of equipment, the noise level in the cabins can be significantly higher than what you experience in your home. A personal supply of noise dampening devices (i.e. ear plugs) is recommended for use while sleeping.

Policies

All of the policies listed below are mandatory requirements for persons working or residing aboard the vessel. The Captain or vessel owner has the right to remove from the vessel, without recourse, anyone who violates any of these policies.

1. The Captain is in command of all aspects of vessel operation and is responsible for the security and safety of the vessel and the people aboard. All persons aboard the vessel are required to follow the instructions of the Captain.

2. Smoking is not permitted within any of the interior spaces of the vessel at any time. The stern deck area is the only designated smoking area aboard the vessel.

3. Every person aboard the vessel shall participate in safety drills as required by the Captain and must familiarize themselves with the Emergency Duties and Muster Station plan and the location of lifesaving and safety equipment aboard.

4. There is **Zero Tolerance** for use of illegal drugs on board the vessel, users are subject to immediate dismissal and will be sent ashore at the nearest airport.

5. Similarly, no alcohol is permitted on board for transport or consumption. Consumption of alcohol or being on board under the influence is considered a violation of the ship's standing orders and violators will be subject to removal from the vessel.

Prior to travelling to join the vessel, it is recommended that you consult local airport and Hamlet/ Village rules and regulations regarding special community requirements or abstentions.

Environmental Considerations

The Government of Nunavut takes the stewardship of its lands and waters seriously. Accordingly, all scientific activities should be conducted in a way that minimizes impacts to the sensitive Arctic ecosystems. Furthermore, in compliance with International Law as per the International Maritime Organization and Canadian law as per the *Canada Shipping Act 2001*, no garbage of any kind should be thrown overboard.

It is also noteworthy that many northern communities have restrictions on the purchase/ transport of carvings made from certain types of material (for example, Narwhal Tusk). Please familiarize yourselves with any local restrictions.

Responsibilities

A successful research program requires the cooperation of captain, crew and researchers. Some responsibilities are shared by all team members. These include:

- Safety: everyone must report unsafe conditions, equipment or practices
- Respect: respect for the environment, the local people and culture and to one another aboard the vessel

There are also specific roles aboard the vessel that need to be observed. Each role has expectations associated with it. These include:

Captain
The captain is responsible for the vessel, its crew and the safety of all passengers aboard. The captain is required to ensure that the vessel is operated in a manner that is consistent with marine regulations and the vessel's Health and Safety Plan. A component of this is ensuring that all passengers are oriented upon arrival of the vessel. The captain is also responsible for directing the crew and must approve the use of crew in research activities. Finally, the captain's approval is needed for the daily work plans presented by the lead scientist.

Crew
The crew of the vessel are responsible for the operation of the vessel and its equipment, its maintenance, the safety of the passengers and providing food for the research team. When the aforementioned duties allow, crew are available to assist researchers with their programs providing adequate training is provided for them to safely conduct these activities.

Researchers
Researchers are responsible for ensuring that they have all the equipment/materials necessary for conducting their research (*please ensure all equipment is labelled with owner's name and contact information*), learning and adhering to the vessel's policies and protocols, and conducting their research in a safe and environmentally friendly manner. The lead researcher is also responsible for compiling and prioritizing the various research activities and developing a plan in consultation with the captain.

Training
Individuals joining the vessel will be provided with an orientation session (see checklist in Appendix C) on the following general safety items:

- The layout of the vessel
- Their responsibilities during emergencies;
- The issue and use of safety equipment;
- Muster and embarkation stations and emergency escape routes;
- Locating and donning lifejackets and immersion suits;
- Safe work practices; and
- The drug and alcohol policy

The completion of familiarization training shall be logged and acknowledged by each recipient and records will be sent to Janelle Kennedy (email:jkennedy1@gov.nu.ca).

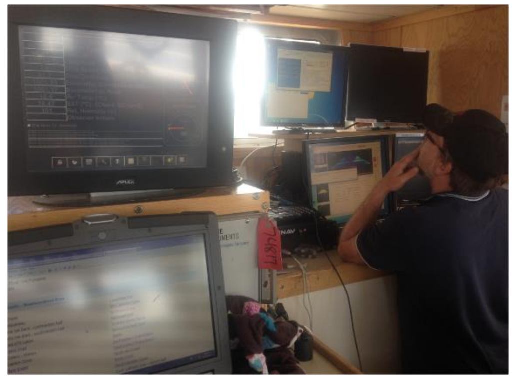
It is important to remember that neither passengers nor crew are permitted to operate equipment without adequate training and permission from the captain.

Also, please ensure that if crew are required to participate in specialized scientific activities that adequate time in the research program be allocated for their training.

Daily operations

Scientific activities

Scientific activities will be agreed upon daily between the captain and the lead scientist. While the crew will do the utmost to help researchers achieve their program goals, decisions and activities cannot compromise the safety of the vessel and its passengers. Therefore the captain retains the final approval of daily operations.



It is advisable to prioritize research activities as weather limitations can significantly shorten program time. If in doubt, the captain may be contacted prior to the field season to assess the feasibility of research plans.

Cooking and Cleaning

Cooking and cleaning are part of the crew’s duties, however tight quarters and a busy schedule require that everyone aboard the vessel play a role in vessel tidiness. The common courtesy of cleaning up after yourself is important in maintaining a safe and pleasant work environment.

Habits of cleanliness (e.g. washing hands, removing deck clothes in the mud room) are important to maintain the vessel and to mitigate the spread of illness given the close quarters of the work environment. Cooking a personal favorite meal can add variety to the menu, and is appreciated, as is helping out with dishes. Both contributions promote team building and also help make crew members more available for other duties such as research activities.

Schedule

While accommodation is made for weather or operational requirements, research activities are typically conducted from 7AM to 7PM. The captain and crew acknowledge that research is the "raison d'etre" for the vessel and will seek to accommodate research schedules at every opportunity. This can be arranged through the captain.

Resupply

The vessel returns to port periodically for fuel and other miscellaneous supplies. Commodities may be in short supply in some of these locations and therefore it is recommended to bring/ship your own supplies where possible.

Storage of scientific samples

Space is limited aboard the vessel, particularly for frozen samples. Though several freezers are aboard to maintain food supplies, only one freezer is available for scientific sample storage. Storing food and samples in the same freezer is not permitted to ensure food safety and sample integrity. A chemical storage locker is also available for laboratory chemicals (e.g. ethanol, formalin etc.).

Shore excursions

Shore excursions can be an integral part of research and an interesting after-hours experience. Due to potential risks associated with wildlife, no shore excursions are permitted without escort from crew members. The captain may also require that the crew escort be armed with a firearm to deter aggressive wildlife.

What and what not to bring

Space on the vessel, particularly when there is a full complement of crew and researchers, is very limited. Therefore it is important to keep the amount of personal gear brought aboard the vessel to the size of a large duffel bag or a small hockey bag. When packing, keep in mind the vessel provides sleeping bags and offers amenities such as clothes washing facilities.

Things to bring:

- Personal medicines (including sea sickness meds)
- Personal protective equipment (safety boots, rain/cold weather gear)
- Personal electronics (iPads, iPods etc.)
- Warm clothes
- Tuque and ballcap
- Sunglasses
- Pajamas
-

Things not to bring:

- Sleeping bags
- Pillows/pillow cases
- Laundry detergent
- Soap
- Towels
- PFDs, standard work gloves, non-prescription safety glasses
- Insect repellent

Shipping Gear

Shipping equipment to northern ports of departure can be expensive. The *FRV Nuliajuk* can transport some required gear north as it travels from its southern staging area to conduct the summer research season. Mobilization of the vessel occurs from Glovertown Shipyard (300 Main St N, Glovertown, NL A0G 2L0; Phone: (709) 533-6792) each spring. Equipment requiring shipping should be sent Attention: Nulajuk to this location by June 15, with notification to Janelle Kennedy. Please ensure that each piece of equipment is clearly labelled with the owner's name and contact information.

Janelle Kennedy
Jkennedy1@gov.nu.ca
(867) 975-7706

Other information and Inquiries

It is our goal to help you achieve success in your research program, expose you to the rich Inuit culture and maximize your experience in our beautiful landscape. Feel free to contact us for additional information.

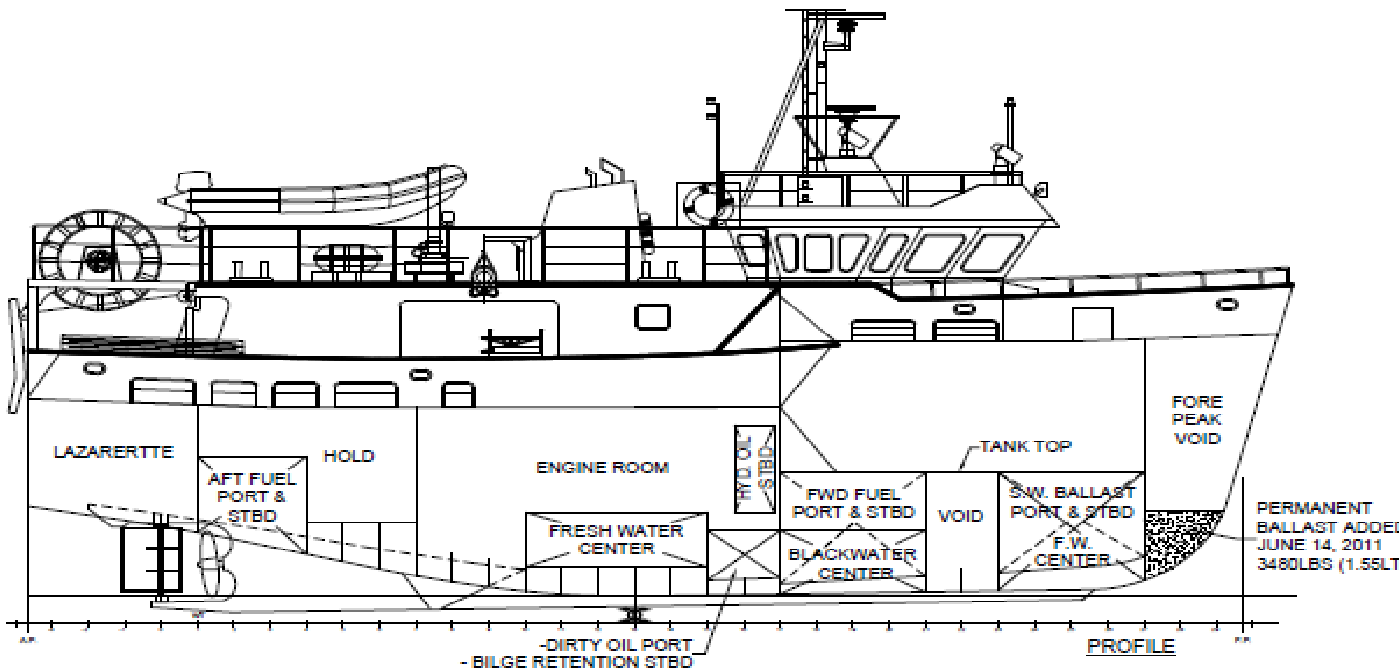
Janelle Kennedy
Jkennedy1@gov.nu.ca
(867) 975-7706

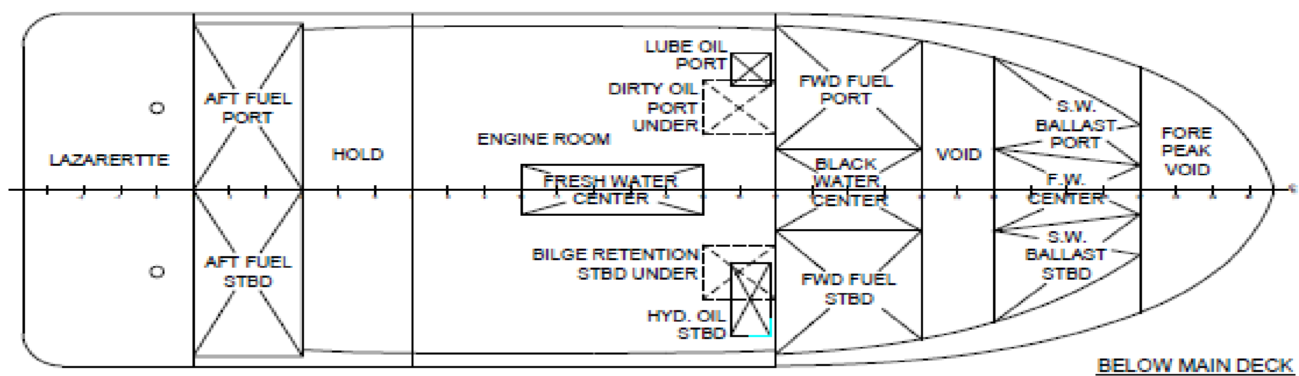
Appendix A: RFV Nuliajuk specifications – updated 15-6-2015

General	
Port of Registry	Iqaluit
Official Number	835270
Call Sign	CFN 5537
Satellite Phone Number	870 773 159 791 (001 + number to dial out)
Built	Glovertown Shipyard, 2011
GRT	121.48
NRT	91.11
LOA	19.5m
LBP	18.64m
B_m	6.55m
Depth	3.7m
Load Draft	9.17 ft
Maximum Drafts	Aft – 10 ft; Fwd – 9 ft
Lightship Displacement	129.44 LT
Load Displacement	181.00 LT
Insurance	Hull and Machinery, Coast Underwriters Ltd, CAD2,950,000 Loss Limit
Insurance	Protection and Indemnity, Coast Underwriters Ltd., CAD150,000,000.
Inspections	
Transport Canada Inspection	Inspection #: 2015-000100-103; Expires June 29, 2016
Fire Inspection Certificate	Valmin Fire Protection Ltd, May 4, 2014
Ship Equipment	
Anchor Arrangement	1 x 700 lbs + 1 Spare x 300 lbs
Anchor Arrangement	1 x 100' ¾" Chain & 800' ¾" Cable (6 x 19)
Propulsion Power	Caterpillar C12 2 x 385 HP / 287 kW @ 1800RPM
Generator Power	Caterpillar C4.4 2 x 44 ekW / 55 kVA @ 1800RPM
Transmission	2 x Twin Disk MG5114, DC 4.17:Reduction
Steering Gear System	Hawboldt, twin cylinder Kobelt 7065-12 cylinders
Rudder Assemblies	Hawboldt Single Blade, 3-1/2" Upper/Lower Stock
Drive Gear	Hawboldt, Fixed Pitch 4-1/2" D Shaft c/w 42P x 50D Prop
Electrical Switchboard	220VAC, 120VAC 1
Deck Crane	Guerra EMA34090, Max Load of 450kg
Fire Pump	Pacer, Model 22-165B
Battery Bank	Caterpillar , 12V Deep Cycle Batteries
Bilge Pump	Pacer Hydraulic Model 22-165B
DC Bilge Pump Shaft	Rule, 3700GPH 24vDC
Bilge Pump (Aux)	Pacer Electric Model 22-167B
Sewage Pump #1	Liberty, Submersible Model LE72m2-2
Sewage Pump #2	AMT, in line, Model 316B-95

Freshwater Maker #1	Horizon SFC/459/-1 Reverse Osmosis 20GPH
Freshwater Maker #2	Seafari Versatile Reverse Osmosis 50GPH
Cooking Range	Garland Electric Model S-686-2
Navigation System #1	MaxSea
Navigation System #2	Aldebaran
Zodiac #1	PRC 12 17' Zodiac, 90hp Yamaha outboard; 12 or 1980kg person capacity. Includes Garmin GPSMap S21 Navigation System
Zodiac #2	14' Zodiac, 30hp Yamaha outboard
CTD Winch	Model DB24-1716/S; Max pull: 350kg, 900m of 3/16" wire rope; 60m/min bar drum line speed.
Crab Pot Hauler	Hydraulic
Current Profiler	Teledyne
Weather Station	Environment Canada AVOS 1.23
Multi Beam Sounder	Furuno FCV 30 Multi Beam Sounder 33KHz 10KW
Capacity Summary	
Fuel	Aft – 2 x 5.44 LT Fwd – 2 x 6.74 LT TTL –24.36 LT 6258 G / 28442 L 4 Tanks
Potable Water	2.56 LT / 450 G / 1703 L 1 Tank
Fresh Water	5.65 LT / 1261 G/ 5725 L 1 Tank
Black Water	3.65 LT / 816 G/ 3704 L 1 Tank
Ballast Water	2 x 3.80 LT TTL – 7.60 LT /1666 G / 7566 L 2 Tanks
Bilge	0.88 LT / 193 G / 876 L 1 Tank
Lube Oil	0.41 LT / 98 G / 445 L 1 Tank
Hydraulic Oil	1.15 LT / 277 G / 1257 L 1 Tank
Dirty Oil	0.80 LT / 193 G / 876 L 1 Tank
Consumption Rates	
Per Engine	@ 1800 RPM – 18.6 GPH / 70.4 LPH
	@ 1500 RPM – 11.0 GPH / 41.8 LPH
	@ 1200 RPM – 5.7 GPH / 21.6 LPH
Per Generator	Max. 3.43 GPH / 13.0 LPH
Safety Equipment	
Immersion Suits	14 x Fitzwright Immersion Suits, Inspection expire: 29-4-2016
Daecon Rescue Scoop	Type RSB 250/6, 2.5m (length) x 6m (depth)
Defibrillator	Zoll AEDPlus
Chemical Storage Cabinet	SAQ031 Sure-Grip(r) EX Stackable "Piggyback" Cabinets 43 x 18 x 24
Fume Hood	18" Ductless Containment Hood with Model 200 Air Cleaner
Liferafts	2 x 10 person SOLAS Liferafts, complete with a type A emergency pack

Appendix B: RFV Nuliajuk's layout





Appendix C: Vessel Orientation

CHECKLISTS OF ITEMS TO REVIEW

General Familiarization

- ☐ Familiarization with general arrangement of vessel.
- ☐ Crew cabin individual emergency station and signals.
- ☐ Shown two distinct routes from person's cabin to the fire and boat musters stations.
- ☐ Locations of Muster Station/Emergency Signals/Fire Plans/Safety Plans.
- ☐ Lifejackets inspected and in good order – demonstration of proper donning, securing and stowage.
- ☐ Location of immersion suits shown – suit tried on and safety features explained.
- ☐ Launch and boarding procedures explained – as well as capacity of life rafts.
- ☐ How to use intership communication system.
- ☐ How to use ship's Windlass, Capstan, Hiab crane, A-frame.
- ☐ Location of Flood Gates and their importance.
- ☐ Location of First Aid kits and eye wash stations
- ☐ Location of MSDS binder, MOSH and CLC part 2, Policy on Work Permits, Lock outs, Tag outs and Safety board.
- ☐ Location of emergency batteries and precautions to be observed in the vicinity of emergency battery containers.
- ☐ Alcohol, drug and smoking policy explained.

Fire

- ☐ Fire station and duties.
- ☐ Location of emergency exits.
- ☐ Location of fire alarm pull stations and general alarm.
- ☐ Location of fire extinguishers and fire hose stations.

- ☐ Location of emergency fire pump starter switch.
- ☐ Location of Halon 1301 fire smothering pull stations.
- ☐ Location of emergency fuel shut-offs for M/E, accommodation fans and E/R intake flaps.
- ☐ Location of vents and fire flaps to be secured in case of fire.
- ☐ Location of breathing apparatus and fire suit and instruction for use and care.

Man Overboard and Abandon Ship

- ☐ Location of life buoys.
- ☐ Location of watertight door(s).

Man Overboard - Continued

- ☐ Location of search light power switch and operation controls.
- ☐ Location of rescue boat and how to launch and recover it.
- ☐ Location of liferafts and instructions on launching.
- ☐ Location of EPIRB and SART.
- ☐ Location of emergency flares and line-firing apparatus.
- ☐ Location of 24 volt emergency lights at liferaft and lifeboat launching area and power switches for these lights.
- ☐ Location of hand-held GMDSS VHF radios.
- ☐ Location of 2 dump valves on stability (flume) tank.

Signature of this document signifies that this induction tour was completed and understood as required by the vessel's policy by the following:

Induction conducted by: _____

Scientist/Guest signature: _____

Date: _____

Full Legal Name: _____

Emergency Contact Name: _____

Emergency Contact Information:

Important Medical and Medication Information: