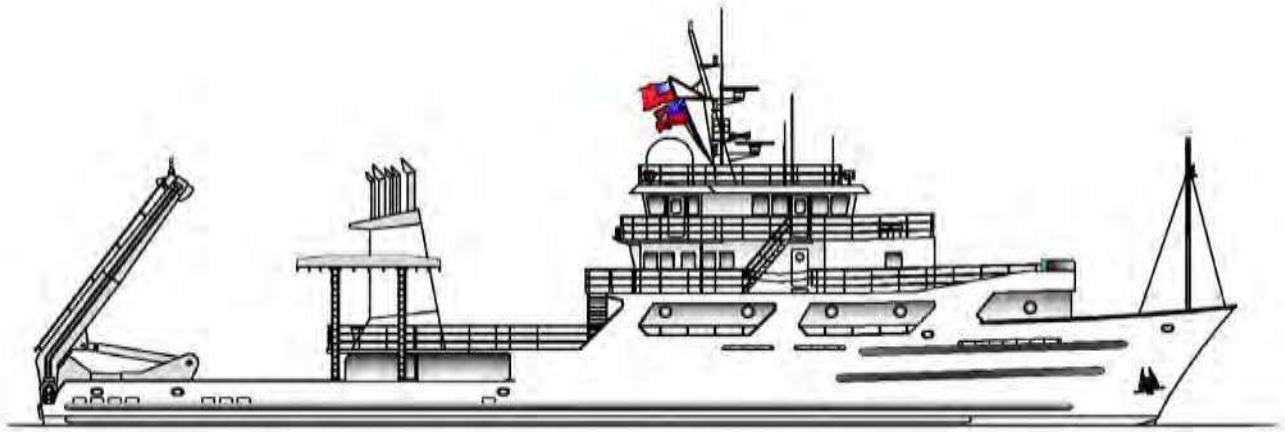
R/V ATLANTIC EXPLORER



Cruise Manual

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R/V *ATLANTIC EXPLORER* is owned and operated by the Bermuda Institute of Ocean Sciences, Inc. in compliance with U.S. Coast Guard, UNOLS and American Bureau of Shipping (ABS) regulations as an uninspected oceanographic research vessel. The Bermuda Institute of Ocean Sciences, Inc. (BIOS) was originally established in Bermuda in 1903 as the Bermuda Biological Station for Research, Inc. and is a U.S. non-profit research and educational institution. BIOS's mission is threefold: to conduct research of the highest quality from the special perspective of a mid-ocean island, to educate future scientists, and to provide well-equipped facilities and responsive staff support for resident scientific staff, visiting scientists, faculty and students from all around the world. In support of BIOS's mission, the R/V *Atlantic Explorer* is set up and operated as a general purpose oceanographic research vessel.

Ready access from Bermuda to the deep ocean makes R/V *Atlantic Explorer* ideal for short and extended cruises, for repetitive sampling and time series at the same station, and for all projects requiring analytical and other sophisticated shore facilities. Bermuda is 2 hours flying time from the U.S. east coast, and is served by daily flights from most U.S. gateway cities.

R/V *Atlantic Explorer* is equipped with navigational, laboratory and mechanical facilities to support biological, geological, chemical and physical oceanographic research. Deploying and recovering deep ocean instrumentation moorings, conducting CTD casts, chemical sampling, and gear testing are among the number of operations within the ship's capabilities.

Requests for ship time may originate from scientists located at any university or institution. Ship costs for National Science Foundation ("NSF") supported research projects are provided by NSF directly to BIOS as part of the annual NSF fleet support grants. Investigators seeking support from agencies other than NSF should include ship costs in their budgets to those agencies. Partially funded researchers may apply for a grant-in-aid from BIOS towards some of their "in house" costs.

BIOS is a participating member of the University National Oceanographic Laboratory System (UNOLS).

This manual provides information and Instructions for potential ship users and embarked personnel on the R/V *Atlantic Explorer*. It contains data on equipment, available instrumentation, technical support and procedures for arranging and conducting cruises, which will assist ship users in planning their cruise. Additional Information regarding the ship's general arrangement, operational capabilities, policies, procedures, and personal safety are also included.

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For additional information write or call:

The Marine Superintendent
Bermuda Institute of Ocean Sciences, Inc.
17 Biological Station
St. George's, GE 01, Bermuda
Phone: +1 (441) 297-1880 Ext. 205
Cell: +1 (441) 707-4163
E-Mail: marine.superintendent@bios.edu

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	K. Larsen	6	020
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Section	Revision Description	Effective Date
000	Preface – amended Phone no. email address, added Cell	06 Jun 2022
010	Added Revision History, sec 020	04 May 2012
501	Amended email address	04 May 2012
502	Amended email address	04 May 2012
504	Amended email address, added form instructions	04 May 2012
509	Amended error in section #	04 May 2012
900	Amended to reflect 2012 BIOS fee schedule	04 May 2012
220	Amended email addresses; instructions for App Sec 504	08 May 2012
509	Amended PCAR instructions and URL	26 Jun 2012
502	Changed BIOS logo	20 July 2012
504	Changed BIOS logo, revised and renamed form	20 July 2012
506	Added Release and Assumption of Risk Form	20 July 2012
010	Added sec 506	20 July 2012
900	Changed BIOS logo	20 July 2012
000	Revised mailing address	18 Sept 2012
100	Corrected mailing and email addresses	18 Sept 2012
700	Replaced with revised ship's drawings.	18 Sept 2012
All Sections	Added footer, names agreement	08 Oct 2012
010	Added new sections	08 Oct 2012
030	Updated technical specifications	08 Oct 2012
040	Updated technical specifications	08 Jun 2022
050	Updated technical specifications	08 Jun 2022
070	Updated technical specifications	10 Jun 2022
080	Updated technical specifications	10 Jun 2022
100	Added new information	08 Oct 2012
210	Added para 3 – Storage Fees	08 Oct 2012
220	Updated and added requirements for 2 forms	08 Oct 2012
230	Updated information	08 Oct 2012
300	Added information to para 4.1	08 Oct 2012
310	Updated information	08 Oct 2012
330	Renumbered – was 510	08 Oct 2012
502	Reorganized form	08 Oct 2012
507	Renumbered – was 509	08 Oct 2012
508	Renumbered – was 504 – revised form	08 Oct 2012
509	Renumbered – was 505, combined forms & instructions	08 Oct 2012
510	Renumbered – was 506	08 Oct 2012
600	Updated equipment list and technical specifications	10 Jun 2022

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Ship Specifications	K. Larsen	3	030
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SHIP SPECIFICATIONS

Built	1982		
Last Conversion	2006		
Length Overall	170’		
Beam	38' 0"		
Draft	11' 6"		
Gross Tonnage	299 (GRT) 861 (ITC)	**Net Tonnage:**	203 (NRT) 258 (ITC)
Full Load Displacement	790 Tons (Light Ship)		1281 Tons (Full Load)
Cruising Speed	10 knots	**Max Speed:**	11 knots
Cruising Range	5,500 nautical miles		
Endurance	28 days (4 hrs hove to for science for every 6 hrs underway)		
Weather limitations	Station-keeping (CTD casts) Sea state 5 (30 kts wind)		
Personnel Capacity	Crew Berths Scientific Berths Total Berths		12 22 34
Laboratory	Main Lab Aft Lab Forward Lab CTD Garage (Complete enclosure for CTD rosette) UNOLS Shared Use Isotope Van – 14’ x 8’ = 112 ft^2		325 ft^2 250 ft^2 230 ft^2 190 ft^2

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Main Engines	16V-149 Detroit Diesels, 2 ea. - 1880 SHP (total)
Gears	Twin Disc 540 - Ratio 6:1
Propellers	Bronze, 4 blade, 74" x 66" diameter
Bow Thruster	3406-T Caterpillar Diesel, 350 HP, 360° directional, 10,000 lbs thrust
Fuel (usable)	56,000 gals #2 diesel fuel
Electrical Power	(3) 8V-71 Detroit Diesel, 255 HP, 190 KW, 3 PH, 120/208/480 VAC
Ship Service	120/208 and 480 VAC
Scientific Service	120/208 and 480 VAC
Emergency Power	Turbo 4-71 Detroit Diesel, 99 KW
Electro-hydraulic	60 GPM @ 3,000 PSI
Diesel-hydraulic	60 GPM @ 3,000 PSI
Compressed Air	(ship systems) (2) Quincy 150 PSI/325 CFM (Science) (1) 40 CFM
Potable Water	39,000 gallons
Potable Water Maker	Sea Recovery, 1200 GPD; Sea Recovery, 2800 GPD
Accommodations A/C	Chilled Water and Air Cooled with zone thermostats
Refrigeration/Freezer	Walk-in Fridge/Freezer

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Navigation and Communications Equipment	R. O'Connell	3	040
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NAVIGATION AND SHIP COMMUNICATIONS

GPS	(2) Simrad MX612 (2) Japan Radio Company JRL21
AIS	(1) Furuno FA100
Navigation Software	Nobletec TIMEZERO Navigator, Marine Navigation Software (electronic charting system)
Auto-pilot	Simrad AP70 MKII
Radars	(2) FAR2127 X-Band ARPA
Depth Sounders	Furuno FE800
Direction Finder	Simrad/Taiyo TD-L 1620 (VHF frequencies)
GPS-compass	(2) Japan Radio Company JRL21
Heading, pitch and roll	Trimble ABX-Two Attitude Sensor
GMDSS Handheld Radios	(4) ICOM GM-1600 SCTs
VHF Radios	Furuno FM8800S ICOM IC-M604 Horizon Intrepid
Satellite Communications	Fleet Broadband 500 <600kB/s Global Express Ka <8Mb/s SeaLink Plus <2Mb/s Iridium Certus (VOIP only)

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Onboard Ship Communication	Hose-McCann Sound Powered Phones Nortel Phone System (telephones) UHF Radio
Cellular Phone	+1 (441) 334-8200
Navtex Receiver	Furuno NX300
Public Address System	Hose-McCann EPIC

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Deck Equipment	R. O'Connell	3	050
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1.0	**Working Deck Area**	Main Deck 01 Deck 02 deck	1550 ft^2 440 ft^2 340 ft^2
2.0	**Bolt-downs**	320 x 1" various positions (mostly 2' & 4' centers)	
3.0	**Bulwarks**	3' height, removable sections at side A-frame, stern A-frame	
4.0	**Stern A-Frame**	Size Outreach Capacity Type	40' h x 22' w 18 Feet 20,000lbs SWL Hydraulic
5.0	**Starboard A-Frame**	Size Outreach Capacity Type	19' h x 10' w 9 Feet SWL 7,500lbs Hydraulic
6.0	**Crane**	Model Type SWL at sea SWL dockside	Appleton KB-70 Articulating with Extensions 2,200lbs at 46ft 6,000lbs

7.0 **Winches:**

7.1	**Hydrographic -**	Model: Type: Brake: Sheave: Wire: Control:	MARKEY DUSH 4 Hydraulic Drive, Single Drum Hydraulic & Manual (band-type) 1/4" 10,000 M 1/4" Hydro Wire At Winch, doghouse and bridge

7.2	**Mooring Winch**	Manufacturer:	Hawboldt Industries
		Model:	SPR 3464
		Type:	General Purpose
		Wire Capacity	2400m of 1' wire
		Pull:	10,000lbs bare drum
		Brake:	Integral gearbox failsafe brake
		Control:	Control platform, remote bellypack and local
7.3	**CTD Winch**	Model: Type:	MARKEY DUSH - 5 Research Winch Hydraulic, Single Drum
		Wire Capacity:	10,000 m, .322" CTD cable
		Slip Rings:	Meridian Channel 4
		Control:	Doghouse, bridge and local
		Brake:	Hydraulic Brake and Manual Band Type

7.4	**General Purpose - Lifting Winch**	Manufacturer:	Hawboldt Industries
		Model:	HSF-0620
		Type:	Trawl Winch
		Brake:	Manual Band
		Control:	Control platform.
		Lifting Capacity	4,200lbs

7.5	**General Purpose CTD Winch**	Manufacturer:	Markey Machinery
		Model:	COM7
		Type:	Electric, Single Drum
		Wire Capacity:	2350 m .322" EM
		Control:	Crane Cab and Engineers office
		Wire:	2350 m .322" EM
		Brake:	Electric
		Slip-Rings:	Meridian MX-04
		Barrel Pull:	4300 lbs.

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7.6	**General Purpose Pedestal Winch**	Manufacturer: Type: Wire Capacity: Control: Brake: Lift Capacity:	Lyons Shipyard Hydraulic, Removable Drum 250 m ¼" synthetic line Local, doghouse and bridge Hydraulic E-Stop ~500 lbs.
7.7	**General Purpose Braden Winch** (On Stern A-frame)	Manufacturer: Type: Wire Capacity: Control: Brake: Lift Capacity:	Braden Hydraulic 50 m 1" Spectra A-frame control station Hydraulic and E-Stop SWL 9,000lbs.
8.0	**Boats**	Zodiac: Capacity:	17'5" RHIB with 90 HP outboard Maximum of 4 Science Passengers
9.0	**Straza Tower** (Aka Moon Pool)	Instrument frame on a trolly system that can be lowered and raised while underway in order to extend beyond the keel. Note that the maximum ship speed is 3 knots when deployed.	

For sensor-specific descriptions, quantities and other technical information refer to Shared Use Equipment, Section 600 of this manual.

1.0 CTD

1.1 The CTD System consists of a Seabird Electronics, Inc. (SBE) SBE9 underwater unit and SBE11+ Deck Units. The standard sensor configuration is primary and secondary (dual) pumped circuit. Each circuit consists of temperature, conductivity and dissolved oxygen sensors. Typical depth limit is 6000m but can be modified for greater depths if needed. Auxiliary sensors consist of: Two fluorometers, transmissometer, PAR, altimeter and digital reversing thermometer.

The CTD system is maintained and operated by the Marine Technicians. The science party is expected to assist during setup of the Niskins bottles and launch/recovery evolutions. If science personnel wish to become more involved in this process or require changes to the standard set-up, please communicate your request to ship.tech@bios.edu in good time ahead of your cruise.

2.0 Rosette/Carousel

In conjunction with a modified SBE Rosette frame, the CTD system utilizes a SBE32 Full-size Carousel Water Sampler.

3.0 Niskin Bottles

3.1 We maintain a pool of twelve-liter Ocean Test Equipment water sampling ("Niskin") bottles. These model 110 water samplers have two Delrin drain valves sized ¼" and ½" and a Delrin air bleed-valve. Silicon O-rings are used in favor of Buna. The Niskins close using external springs. We have a number of "hot-swappable" spares onboard that can quickly be deployed in place of a faulty bottle.

We have 6 twelve-liter Ocean Test Equipment water sampling ("Niskin") bottles that can be clamped to a wire or rope for use in conjunction with messengers for closure. Please give advance notice if you will require the use of these during your cruise.

A number of spare Niskin bottles are also kept ashore. These spares are Ocean Test Equipment 110's or General Oceanics model 12-liter standard samplers.

These bottles are not maintained as part of the shared-use inventory and are considered "Cold-Spares".

4.0 Flow-through Seawater System

4.1 The intake is located on the starboard bow of the ship, approximately two meters below the water line. The vertical intake below the water line is stainless steel while the internal pipework is a mixture of Schedule 80 PVC and "Spa Flex" PVC hose. The underway Flow-through Seawater System consists of two SBE38 remote temperature sensors (mounted as close to the intake as possible). Two SBE45 thermosalinographs, two Wetlabs transmissometers. Flowmeters are located at various points throughout the system with data logged continuously. With the exception of the SBE38s the environmental sensors are mounted on the "water wall" in the forward lab. Prior to the water wall, the flow through water splits into two; one channel flows via a debubbler to the water wall while the other channel flows to sampling ports in each lab (also via separate debubbler). Due to constriction from sensor tubing size, flow rate through the water wall is around 4L/min. Sampling ports can deliver up to 35L/min with certain configurations. Please ensure that any underway sampling requirements are discussed with the marine technicians in good time ahead of your cruise and again during mobilization.

5.0 Meteorological

5.1 The meteorological sensor suite onboard consists of the following: Two barometers, two temperature and relative humidity sensors, precipitation gauge, dual mechanical anemometers, precision infrared radiometer, standard precision pyranometer and surface PAR sensors.

6.0 Data Acquisition System

6.1 We use Campbell Scientific data loggers for general data logging and display. Data displays are located throughout the laboratories and on the bridge. All underway data is recorded into sensor specific comma separated values files. This system is highly configurable and in addition to the main logging system, client versions of the software can be setup on additional workstations to allow for custom real-time display, event configurations and data playback.

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Scientific Instrumentation and Equipment	R. O'Connell	3	070
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7.0 ADCP

7.1 An RDI Ocean Surveyor 75 kHz phased array ADCP is installed on the starboard side of the hull around frame #32 or approximately 1/3 of the ship's length aft of the bow. A Trimble ABX-Two HPR sensor along with the ships GPS positioning system provide position, heading and attitude information. The data from the RDI deck box and external sensors is feed to a standalone UHDAS Linux server and is connected to the ships network. Daily figures of the data and daily reports are available through the UHDAS website.

The data is processed and displayed through the University of Hawaii's UHDAS program. Common UNDAS displays are available on the monitors throughout the ship.

8.0 Q-Water system

8.1 The ship has a science quality water system that is capable of producing up to 700 liters per day. The system is feed from the ships potable water tanks and runs through two pre-filters before being treated by a Millipore Elix Advantage reverse osmosis system. This R/O water is collected in 2 x 100-liter PTFE reservoirs and then available on demand from a MilliQ A+. The system can be fitted with additional point-of- use (POU) filters depending on your needs. Inquire well in advance of the cruise if you require extra POU filters or have questions about the system.

9.0 Echosounder

9.1 The vessel is equipped with a Knudsen 3260Chrip system which operates a 12 kHz transducer and a 3.5 kHz array. The echosounder are not normally in constant use during a cruise and are typically employed to assist with near bottom operations.

10.0 Nets

10.1 The R/V *Atlantic Explorer* does not have nets in our shared Use Inventory. However, the labs at BIOS have a range of nets that can be offered for hire. Please contact marine@bios.edu for more information on nets.

11.0 Radio-isotope Van

11.1 A custom UNOLS isotope van resides on the RVAE for use with NSF funded projects. The van is equipped with a fume hood, refrigerator and sink with fresh water. A Perkin Elmer Liquid Scintillation Counter and computer are located in the van as well. Requesting use of the isotope van should begin on the UNOLS ship-time request form (STRF). All isotope uses and protocols must be vetted through the BIOS radiation safety officer prior to shipping to BIOS or the RVAE.

12.0 Internet

12.1 The ship's primary internet is a Ku band (Vsat) system with dual Intellian V150NX domes. We have an emergency backup Iridium Certus system that can be patched to critical systems in event of issues with our primary connection. Our standard plans are detailed below. Note that all speeds are listed in kbps. CIR = Committed Information Rate; MIR = Maximum Information Rate.

1. SeaLink Plus (Ku Band)
    a. Shore to Ship (Download) 4096 CIR / 8192 MIR
    b. Ship to Shore (Upload) 2048 CIR / 4096 MIR
2. Iridium Certus
    a. Shore to Ship (Download) Best Effort CIR / 704 MIR
    b. Ship to Shore (Upload) Best Effort CIR / 352 MIR

Our systems are scalable to science requirements; however, changes to these systems take time. If you require additional bandwidth for needs such as live video streaming or dedicated tunnels, you must make this know on your STRF or contact us well in advance of your cruise. Additional cost or fees may be applicable. Internet usage is monitored by the Marine Techs and scientists are briefed to update all personal devices prior to joining the vessel. Furthermore, all unnecessary cloud syncing (Dropbox, Google Drive etc.) should be disabled while onboard.

WiFi is available throughout the living and working areas of the vessel as well as on the back deck and personal devices are permitted. Any device with an OS older than Windows 10 is not be permitted on the network for security reasons. Devices such as laptops, tablet and phones should be fully updated prior to the cruise and any unnecessary sync services temporarily disabled.

The local network provides multiple ways to transfer files from different machines on the ship so as not to clog up bandwidth. This method of data transfer while onboard is highly preferred over cloud services such as Dropbox or Google Drive as it greatly reduces the strain on our internet connections. Please speak with the marine technicians for more information on getting access to the network drives.

13.0 Science Fridges and Freezers

13.1 The main lab has two upright –18°C freezers (20 cubic feet) that are strictly limited to trace organic seawater samples (no fixatives).

The aft lab has two upright ThermoFisher TSU 300 series –80°C freezers for general use. These have an internal volume of 14.9 cubic feet each.

The aft lab also has a dead fridge (4°C), dead freezer (-18°C), live fridge (4°C) and live freezer (-18°C).

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Communications	R. O'Connell	3	080
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1.0 Ship Internal Communications

1.1 A Nortel telephone system provides communication throughout the vessel. Instructions and a directory of numbers are posted by each phone. There are two outside lines available while connected to shore telephone lines at the BIOS dock. Check with the crew for additional instructions if required.

1.2 A Hose-McCann EPIC 4 zone system provides a general alarm and vessel wide public address system with talk back speakers located at key operational areas.

1.3 UHF radio communications are the primary means for communication between the crew. Radios can be made available to the science party if required.

2.0 Marine Radio

2.1 R/V *ATLANTIC EXPLORER* continuously monitors VHF channels 16 and 27. HF 2182 kHz Single Sideband is also monitored. In the unlikely event of being unsuccessful via all other means, emergency calls can be forwarded through Bermuda Radio if needed. Their phone number is +1 441 297-1010.

2.2 The ship's call sign is WDC9417.

3.0 Satellite Voice Communications

3.1 The vessel is equipped with several satellite phone systems. Phone systems are available for use, on a limited basis, free of charge. Instructions for each phone system are shown on/alongside each handset. Heavy use of a phone system may result in charges being levied against the PI/CS. The systems available are:

Inmarsat FBB VOIP located on the bridge.

Inmarsat GX VOIP phones located on the bridge and in the infirmary.

Iridium L-Band VOIP phones on the bridge and in the infirmary.

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SHORE SUPPORT & FACILITIES

1.0 Facilities

1.1 Shore support facilities for the R/V *ATLANTIC EXPLORER* include a dock, inside and outside storage, and offices. The facility has a fork truck, and commercial crane services are available.

2.0 Loading/Off-Loading

2.1 The R/V *ATLANTIC EXPLORER* will normally be loaded on the day before departure and off-loaded on the day of return and the day after. When it is necessary to set up equipment prior to the day of departure, check with Marine Technical Services - ship.tech@bios.edu - in advance to coordinate operations with the deck department.

2.2 When loading must occur at Pennos Wharf, whether planned or unplanned, use of BIOS trucks may be required and fees will apply. When planning, this should be scheduled as early as possible. For unplanned loadings/off-loadings at Pennos Wharf, whenever possible the Marine Department may be able to assist in organizing transport. Fees will still be borne by the CS/PI.

2.3 For personnel movement BIOS can provide transport via the bus and a driver, but charges will apply. Taxi, bus or mini-bus are also options. Reception can provide phone numbers or bus tickets for outside transport companies

3.0 Weight Handling Equipment

3.1 The ship's crane is normally available for loading. Limitations on weight lifting are listed under "Cranes" in this manual. Extra heavy loads may require commercial shore crane services. The Marine Operations Office will assist in making such arrangements.

4.0 Shipping to BIOS

4.1 Please ship supplies and equipment well in advance of your cruise.

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4.0 Shipping to BIOS

4.1 Please ship supplies and equipment well in advance of your cruise.

4.2 All shipments of scientific equipment and supplies for your cruise must be addressed to BIOS ***exactly*** as shown below in order to facilitate a smooth and efficient customs clearance procedure:

4.3 Bermuda Institute of Ocean Sciences, Inc.
Master, R/V *Atlantic Explorer*
17 Biological Station
St. George's GE 01
Bermuda
Attention: (your name/ cruise number or ID).

4.4 The Bermuda Government collects no customs duty for any incoming scientific gear consigned to the ship. In order that no customs duty is charged, place your name at the **bottom** of the address with your cruise number or ID as shown above. Attach a packing list of all equipment and supplies, together with value of same, with your shipment. If your shipment consists of more than one box or container, mark each with the shipping address and number them (1 of 4), (2 of 4), etc. Your Freight Forwarder or shipping department should be able to help you with this.

4.5 The Packing List is used as an "invoice" when clearing items through Customs; without this, goods cannot be released from the warehouse. Freight will be picked up from the airport or docks and will be held at BIOS to await your arrival. A trucking and storage charge will be made for this service and billed to your grant. Please make arrangements with BIOS for payment of these charges.

4.6 Notification of shipment should be made as early as possible so that arrivals can be anticipated for receipt and storage.

4.7 Email your shipping information and any questions to: freight@bios.edu and cc: ship.tech@bios.edu

4.8 Outgoing shipments: After a cruise and prior to their departure from BIOS, it is the responsibility of the CS and the individual scientist to properly pack, prepare and document their shipments. If BIOS has to intervene due to incomplete paperwork or other deficiency caused by a hasty departure, fees may be levied. All shipping can be coordinated through the Marine Technicians.

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5.0 Warehouse Storage

5.1 Temporary and transient storage before and after funded cruises is provided free of charge in most cases. Fees may be applied for additional time or long term storage or bulky items. Inside and outside space is limited so please plan well in advance. Current fees can be found at http://www.bios.edu/visitor_info/facility_fees.html Contact ship.tech@bios.edu for all storage enquiries.

5.2 Items or gear left in storage without payment of fees or coordination with the Marine department will be considered abandoned and will be disposed of at our discretion. Any fees related to the cleanup or disposal will be levied to the PI/CS of the project that requested storage.

6.0 Telephone Communications with BIOS

6.1 A directory of BIOS staff and faculty can be found at the BIOS website: http://www.bios.edu/people_facility/staff_directory.html

6.2 The Bermuda phone numbers for:
Marine Operations: 441-297-1880 ext.233 ext.205 ext.130.
Marine Superintendent (C): 441-707-4163
Port Captain (C): 441-707-1596.
Manager Marine Technical Services (C): 441-707-1156.

6.3 From the U.S., you may contact the Marine Operations Office using our U.S phone number: 646-547-1788 and using the above extensions.

7.0 Email

7.1 Marine Department - Marine Superintendent, Port Captain, Marine Operations Coordinator, Marine Technical Services Manager – marine@bios.edu

7.2 Marine Operations Coordinator, Marine Superintendent - marine.operations@bios.edu

7.2 Marine Technical Services - Marine Technical Services Manager, Marine Techs: ship.tech@bios.edu

8.0 **Mail**

8.1 Name
Department
Bermuda Institute of Ocean Sciences, Inc.
17 Biological Station
St. George's GE 01
Bermuda

8.2 Note: Mail to Bermuda can be slow. If you need to get something to us quickly, we recommend using FedEx.

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Scheduling	D. Moran	1	200
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1.0 Cruise Scheduling

1.1 The process of requesting and scheduling ship time on the R/V *ATLANTIC EXPLORER* is started by submitting a University National Oceanographic Laboratory (UNOLS) Ship Time Request Form.

1.2 Go to: http://www.gso.uri.edu/unols/ship/mainmenu.html

1.3 Normally, February of the preceding year is the deadline for submitting ship requests for research planned in the following year. NSF decisions are usually made by early summer. At that time, a principal investigator's (PI) ship time will be reported as funded on the R/V *ATLANTIC EXPLORER's* draft ship schedule for the following year. As the scheduling process moves into late summer and fall it is important that the PI and Marine Superintendent maintain a dialog about finalizing exact dates of cruises.

2.0 Departure and Arrival Restrictions

2.1 There are certain operational restrictions for our transit of Bermuda Pilot waters. All transits must occur during day light hours. We are also restricted to a small time period around high water during which we may safely navigate the Ferry Reach channel to or from BIOS. Your exact departure and arrival times will be discussed during pre-cruise planning with the Marine Superintendent.

2.2 If high water occurs after 1200 hrs local Bermuda time on days of departure, or before 1200 hrs on days of arrival, it may be possible to depart/arrive from St. George's Harbor to facilitate the cruise schedule. This option is very dependent upon dock space availability and operational logistics.

2.3 Since this is not always possible, we recommend that you include departure and arrival days in your planning, by requesting enough Operational Days to allow for these restrictions.

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Financing and Fees	D. Moran	3	210
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1.0 Financing

1.1 The cost for using the R/V *ATLANTIC EXPLORER* will be charged on an "Operational Day" basis. NSF defines an "Operational Day" as any part of a calendar day spent away from its home port in support of a given scientific cruise. The cost for an "Operational Day" is renegotiated annually. For financial planning purposes, that cost can be established with the Marine Superintendent.

1.2 Ship operations costs are funded in two ways. 1) The cost for PI's which have NSF funded ship days will be included in Ship Operation Support Grants directly to BIOS. 2) PI's without NSF funding should include ship operations costs in the budget of their particular research project.

2.0 Lab/Shore Facility Fees

2.1 A daily facility fee will be charged for visitors during non-ship use days spent at BIOS. Refer to the BIOS schedule of fees in Appendix Section 900 for rates. Contact Jane Burrows, Manager Housing and Reservations: jane.burrows@bios.edu

3.0 Storage Fees

3.1 Temporary and transient storage before and after funded cruises is provided free of charge. Fees may be applied for additional time or long term storage. Space is limited so please plan well in advance. Current fees can be found at http://www.bios.edu/visitor_info/facility_fees.html Contact ship.tech@bios.edu for all storage enquiries.

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Pre-Cruise Planning	D. Moran	3	220
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1.0 Pre-Cruise Planning

1.1 The Chief Scientist of each cruise is responsible for coordinating all planning and reporting of his/her particular cruise. Various forms are used to submit pre-cruise planning information to the Marine Operations Department and are described here.

1.2 Once the Chief Scientist's cruise on the R/V *Atlantic Explorer* has been established and is scheduled, it is desirable to immediately start planning the cruise in more detail. The Pre-Cruise Planning Form spells out the dates of the cruise, the general purpose, the number of scientific personnel and equipment requests. Experience has shown that the sooner specific details are given to BIOS's Marine Operations Department, the better are the chances of a successful cruise.

1.3 The Chief Scientist should make his/her initial contact with the Marine Superintendent as soon as possible to clearly define the specifics, objectives and needs of the mission. Please email all cruise planning communications to: marine@bios.edu (Marine Superintendent, Port Captain, Manager - Marine Technical Services, Marine Operations Coordinator). This will set in motion the preliminary guidelines and schedules for preparation of the ship, its equipment, supplies and special needs.

1.4 Contact between the Chief Scientist and the Marine Operations Department should be maintained throughout the preparation stages of the cruise. This team work keeps shore support and crew abreast of changes or deviations from the original plan. Good logistics planning is required for potential problem areas concerning deck handling equipment, storage, weights or scientific gear, work space requirements, electronic interfacing, scientific power supply needs, hazardous materials, small boat operations, etc. Good communications are essential for a successful cruise.

1.5 The Pre-Cruise Plan establishes the Chief Scientist's requirements for the ship, its personnel and equipment, in relation to the scientific work to be performed.

1.6 The Pre-Cruise Plan is prepared by the Chief Scientist with a final copy forwarded to the BIOS Marine Operations Department: marine@bios.edu **at least 2 months in advance of the cruise departure date**. Some cruises require significantly more advanced planning and may necessitate conferences and visits to the ship.

2.0 Shore Side Accommodations

2.1 You will need to make arrangements for accommodations ashore if you plan to arrive before your day of departure or stay beyond the day of arrival. Accommodations at BIOS should be requested and booked well in advance. At least 6 months is recommended.

2.2 Contact Jane Burrows, Housing and Reservations Manager with requests for accommodations: jane.burrows@bios.edu. If no accommodations are available at BIOS, contact the Marine Superintendent to see if it is possible to stay on the ship, but do not expect or plan on this. Room and board aboard the R/V *Atlantic Explorer* for days other than awarded ship days are billed at the same rates as outlined in the BIOS Schedule of Fees.

3.0 Personal Information and Release & Assumption of Risk Forms

3.1 All completed Personal Information Forms and Release and Assumption of Risk Forms are held on file aboard the ship and in the Marine Operations Department.

3.2 Each individual who has not previously sailed aboard R/V *Atlantic Explorer* or other individuals, as directed, must submit a Personal Information Form prior to the ship's departure. The ship **will not** sail until these forms have been received by the Marine Department. This form, Appendix Section 508, is a fillable pdf which can be down loaded from the ship's web site, completed electronically and emailed to marine.operations@bios.edu. Handwritten forms are no longer acceptable.

3.3 ALL personnel must submit a Release & Assumption of Risk Form. Generally you will only be required to submit the completed form once, unless changes have been made. The Marine Operations Department will advise if so.

4.0 Medical Care

4.1 The R/V *Atlantic Explorer* has limited medical supplies and capabilities. Medical supplies consist of a MedAire "Ocean Pac" which contains the items required for routine emergencies.

4.2 All injuries and illness **must** be reported to the Master immediately.

4.3 The ship uses Medical Advisory Systems from George Washington Medical to provide professional medical consultation over the ship's satellite phone system for emergencies. This service is available 24 hours a day.

4.4 A Medical History and Information Form is located in Appendix Section 509. It is strongly recommended that you complete this form and give it to the Master upon boarding. You may place it in a sealed envelope to be used only in case of emergency. If a medical emergency occurs at sea, the information on the form could prove to be vital in your treatment and care.

4.5 Any medical condition that might compromise your safety, the safety of the ship, or interrupt the progress of a cruise must be noted on the Personal Information Form.

5.0 Insurance

5.1 If you are not a BIOS full time employee, you must provide your own health and accident insurance. When you sign the Liability Waiver, you certify that you have your own Medical and Accident Insurance.

6.0 Reserved

7.0 Marine Technical Support

7.1 Marine Technical Support is an integral part of every cruise. The Marine Technicians provide basic technical service ashore and at-sea to support your project. The basic technical services provided are similar to other UNOLS ships and is defined by NSF and UNOLS. Pre-planning and communication with the team will insure your needs can be meet.

7.2 A Marine Technician will be provided to supervise the operation of "shared-use" equipment at sea. The Marine Technician is also responsible for maintaining all shared-use equipment. The Marine Technician will be provided a bunk in the scientific allotment for each cruise.

7.3 Non-NSF users must pay a daily charge for the Marine Technician.

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Pre-Cruise Planning	S. Brittner	3	220
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8.0 Hazardous Materials

8.1 The Chief Scientist is responsible for providing information about all chemicals and hazardous material to the Marine Superintendent and to the Manager, Marine Technical Services.

8.2 Material Safety Data Sheets (MSDS's) must be provided for all chemicals, reagents, hazardous materials, etc.

8.3 Plans to use any explosives, special chemicals, flammables, toxic solutions or radioactive materials must be approved by Marine Operations two months prior to the cruise.

8.4 A listing of the types of hazardous materials to be used on the cruise must be included on a separate sheet with the Pre-Cruise Planning Form. A description of radioisotope experiments in sufficient detail to permit review by the BIOS Radiation Safety Officer will also be required.

8.5 The Chief Scientist is responsible for providing any spill clean-up equipment and supplies that might be needed in sufficient quantity and type for the material being used.

8.6 A HazMat Information Form must be submitted to the Master or Marine Technicians prior to embarking any hazardous material. This form is provided in Section 504 of this manual.

9.0 Shared Use Equipment

9.1 See Appendix Section 600 for a list of available Shared Use Equipment.

9.2 If it is anticipated that "shared-use" equipment is necessary on the cruise, a listing of this should be included with the Pre-Cruise Plan for evaluation and scheduling of this equipment.

9.3 At least 2 months prior notice should be given to in order to schedule the equipment for the cruise and allow enough time to have it properly prepared.

9.4 NSF-funded users are provided the use of this equipment at no charge, except for expendable supplies.

9.5 Non-NSF users must pay use and preparation charges for this equipment in addition to expendable supplies.

10.0 Radioactive Materials

10.1 All radioactive material work areas and storage facilities will be surveyed for contamination by the principle investigator or his/her designee prior to the termination of the cruise. Wipes will be given to the Master or his designee to be forwarded to the BIOS Radiation Safety Officer for evaluation. These wipes will be clearly identified as to where they were taken on board ship.

10.2 Each investigator using radio-nuclides will submit a final written report as to the disposition of all radio-nuclides brought on board ship, including experimental loss during the cruise. This report must be given to the Master at the termination of the cruise. A copy of this report will be sent to the BIOS Radiation Safety Officer and Manger, Marine Technical Services

10.2 Any possible human uptake or significant release to the ship's environment of radioactive material or toxic chemicals shall be reported to the Master. Any significant radioactive spills shall be cleaned up immediately.

11.0 Passport / VISA Requirements

11.1 All persons flying to/from Bermuda – including U.S. citizens and Bermudians – must present a passport. For visa info, check with Bermuda Department of Immigration at www.immigration.gov.bm. Since most flights to/from Bermuda are through the US, US regulations must be followed. http://travel.state.gov/. These rules are subject to change; please verify information prior to traveling.

11.2 Any person joining the ship regardless of port of embarkation must have a valid passport and if required, a visa.

12.0 Transportation Worker Identification Card (TWIC)

12.1 Required for all crew and recommended for scientists and technicians.

12.2 TWIC allows unescorted passage (with the permission of the ship or shore facility Security Officer) through, and access to ships and shore facilities (U.S.) that have active security plans implemented. Without a TWIC, you will be required to be escorted at all times. Unauthorized entry to secured facilities and vessels is a violation of U.S. Federal Statutes.

12.3 For scientists conducting cruises on R/V *Atlantic Explorer* to and from Bermuda, a TWIC is not required.

12.4 See UNOLS TWIC information at: http://www.unols.org/info/UNOLS_TWIC_INFO_051408.pdf

12.5 BIOS is not a secured facility, but R/V *Atlantic Explorer* is. As a "secured facility" certain areas of the vessel have restricted access and are marked "Restricted." Restricted areas of R/V *Atlantic Explorer* include the wheelhouse, all storage spaces, the Marine Tech Office, the Captain's Office, all crew quarters, mechanical rooms and all spaces below the main deck. You must have permission of the Master and an escort to enter these restricted spaces. Normally, the only one of these spaces to which scientists routinely require access is the wheelhouse. Since it is always manned by the ship's crew while at sea, they are your escort.

13.0 Research Permits

13.1 Marine Science Research Authorizations are not required for work in Bermuda's EEZ when conducted from the R/V *Atlantic Explorer*.

13.2 Marine Science Research Authorizations must be arranged well in advance of your cruise if you plan to conduct research in the EEZ of any other country. See: http://www.state.gov/g/oes/ocns/rvc/ and http://www.unols.org/publications/index.html#foreign

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Cruise Plan	J. Caison	2	230
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1.0 Cruise Plan

1.1 Once the Pre-Cruise Plan has been approved by the Marine Superintendent, a Cruise Plan is prepared by the Chief Scientist. Refer to the Appendix, Sec 503, for an example of the Cruise Plan. The Cruise Plan is the daily schedule of operations for your cruise with positions of science stations, description of work at each station, any work to be done underway between stations, etc. It must also show the Cruise Number or identification of your cruise, and list of all science personnel including the Marine Technicians.

1.2 The Cruise Plan becomes the order to the ship's Master to proceed on specified dates and times to specific geographic locations to accomplish the work requested. The Master will follow your plan unless there is any question about the safety of the proposed operation.

1.3 The Cruise Plan, once received on board, is posted in the lab, main passageway and in the wheelhouse. Any changes to the posted plan must be discussed and approved by the Master and these changes made to the posted plans. This is very important because it prevents misunderstandings, promotes safe operations and prevents lost time. **The Master and Watch Officers follow the plan posted in the wheelhouse. If you need to change your plan, be sure the new plan is posted in the wheelhouse!**

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Post Cruise Report	S. Brittner	2	240
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1.0 Post - Cruise Report

1.1 The Chief Scientist is expected to complete a UNOLS Research Vessel Post Cruise Assessment Form (PCA) as soon as possible after the completion of their cruise. This can be done on-line: http://gsosun1.gso.uri.edu/cgi-bin/pcget.cgi Other members of the science party are also invited to complete a PCA if they feel they have something relevant to submit.

1.2 The UNOLS Post Cruise Assessment Form is easy to complete. Describe the degree of success achieved in accomplishing the cruise's scientific objectives; any problems encountered which affected the research program, and any safety concerns. Document the performance of the vessel, officers, crew, technicians and shipboard equipment and instrumentation. UNOLS maintains a record of these forms and is able to note and evaluate each vessel's pattern of performance.

1.3 Constructive criticism is encouraged to help improve the quality of services provided to scientists using the R/V *Atlantic Explorer*.

1.4 Any issue deemed inappropriate to record on the Post Cruise Assessment form should be communicated separately to the Marine Superintendent - marine.superintendent@bios.edu .

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Ship Administration	J. Caison	2	300
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1.0 Purpose

1.1 The primary purpose for operating a research vessel is to provide a safe platform at sea on which scientific personnel can accomplish oceanographic research. It should provide adequate machinery and working spaces, storage, navigational functions and living quarters. To this extent, it is the desire of the operating institution and the crew of the ship that scientific objectives are met safely and with the maximum possibility of success. In order to achieve these goals, certain "laws of the sea" and acknowledged rules and regulations are necessary, particularly, where they involve the safety of the ship, crew and science party.

2.0 Master

2.1 The Master of R/V *Atlantic Explorer* has full and final legal authority for the safety of the ship, all scientific operations and all members of the crew and science party, on board and in all foreign ports. **The Master's authority is absolute.**

3.0 Watch Officer

3.1 When the Master is not on watch, his authority is exercised by the deck officer on watch. Any differences that cannot be remedied by the watch officer should be referred to the Master.

4.0 Chief Scientist

4.1 One Chief Scientist is designated for each cruise and will be responsible for the activities of the entire compliment of science personnel, even though some may not be affiliated with his or her own project(s). These responsibilities will include:

- Conduct of all scientists
- Activities of all scientists, including: identification of ancillary users, their home institutions, source of funding (if not awarded ship time by NSF)
- Storage of scientific equipment
- Cleanliness of lab and science accommodation areas

- HazMat and Isotope use
- Provide a "Plan of the Day" to the Master and Marine Technician
- Designate scientific watch leaders to facilitate communication between crew and scientific party.
- Post-cruise coordination of ALL science personnel.
- Complete a Post-Cruise Assessment on-line through the UNOLS website

4.2 The Chief Scientist must be aware of the capabilities and limitations of the ship and crew, and stay informed during the cruise regarding conditions which might affect the scientific mission. Conversely, the ship's officers need to be informed of maneuvers required, so that they can plan and execute them according to the scientists' needs. As in all joint endeavors, maximum benefit will be derived from good communications and teamwork.

4.3 The ship and crew are there to assist in carrying out the scientific mission. The Master and crew will make every effort to carry out the desires and requirements of the Chief Scientist unless it is unsafe or illegal.

4.4 The Chief Scientist is responsible for providing enough trained and experienced personnel for all on deck or over-the-side operations. The ship's crew are always willing to assist and with the Master's permission may be available for certain operations with the understanding that their primary duties are to operate the deck equipment and carry out their other safety and watch standing responsibilities. Do not expect or plan to use them as extra science help.

4.5 Chief Scientists, as required by UNOLS, must certify or provide proof of having received Sexual Harassment training from their home institution.

5.0 **Marine Technical Services**

5.1 Pre-Cruise the Marine Technicians will assist in the following:

- Preparing shared-use-equipment for use as described in the pre-cruise plan.
- Communication with the PI or CS to learn cruise specifics and inform users of the vessel layout and capabilities.
- Assignment of lab spaces and berthing.
- Setting up laboratories and equipment giving special attention to safe and effective use at sea.

- Instructing or updating scientific personnel in proper and safe use of equipment and to see that established safety and other appropriate ship procedures are observed.
- Advise users of any fee's that may be applicable to their cruise.

5.2 While at sea:

- Assure that facility provided science gear is operating properly and safely.
- Liaise between ship's crew and scientific personnel, especially with regard to over the side operations and planning of daily objectives.
- Assist with scientific operations and other tasks, as primary responsibilities permit.
- Monitor and maintain all shared use, underway and data acquisition systems.
- Monitor and maintain the ship's computers, email and internet access systems.

5.3 Post Cruise:

- Coordinate off-loading, transportation and shipping requirements with the PI/CS.
- Provide the PI/CS with a data distribution disk of all acquired data.
- Take appropriate measures to repair service and calibrate shared-use scientific gear in preparation for the next deployment.

5.4 Other support activities:

- Assure proper storage of shared-use gear when not in service.
- Regular data archiving ashore and to the R2R National Archive.
- Maintain appropriate property control and utilization records.
- Accept, prepare and control project-specific gear for staging prior to cruises and coordinate loading and unloading of scientific equipment.
- Prepare shared-use equipment and project specific gear for shipment to and from ports of call.
- Provide feedback through the Post Cruise Assessment System.

5.5 Support activities **NOT** provided by Marine Technical Services

- Upkeep and operation of specific scientific equipment and instrumentation that is under development or maintained for individual research projects.

- Routine Scientific watch standing at the detriment of performing primary duties.
- Data reduction, analysis or post-processing.

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Ship Safety	J. Caison	2	310
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1.0 UNOLS Research Vessel Safety Standards

1.1 Cruise participants are encouraged to read this safety information (linked below) before their cruise. It explains safety standards and procedures used and followed throughout the UNOLS fleet.

1.2 http://www.unols.org/publications/manuals/safe_man.html

2.0 Fire/Emergency Procedures

2.1 The alarm for this is at least 10 seconds of continuous sounding of the ship's alarm bells and whistle.

2.2 In response, you should put on your life jacket (located in your stateroom locker) and proceed immediately to the 01 Deck Muster Area and await instructions. It is best to wear a jacket, long pants, hat and shoes. If you are unable to get to your stateroom, get a life jacket (PFD) from one of the deck lockers on the port side of the 02 deck and then safely proceed to the 01 Deck Muster Area.

2.3 The end of an Emergency Drill will be indicated by three short blasts of the whistle and bells. Replace your life jacket where you found it.

3.0 Abandon Ship

3.1 The alarm for this is seven short blasts and one long blast on whistle and general alarm bells.

3.2 In response, you should proceed immediately to the port side of the 02 Deck Muster Area. Survival Suits are stowed there in deck lockers. If an actual sinking is eminent, immediately remove the life jacket and get into the survival suit. The survival suit is buoyant and will replace the need for a life jacket. Await further instructions and be prepared to assist in the launching of the Life Rafts. Once the life rafts have been inflated and secured alongside, begin boarding through the opening in the raft canopy. Follow the orders of the ship's officer designated as raft commander.

3.3 The end of an Abandon Ship Drill will be indicated by three short blasts of whistle and alarm bell. Return your exposure suit to a member of crew and replace your life jacket where you found it.

4.0 Man Overboard

4.1 In the event of a man overboard call out "MAN OVERBOARD" as loudly and often as possible. Indicate the side of the ship from which the victim fell, and make sure someone relays the message to the bridge. The alarm "Man Overboard" will be given over the PA system throughout the vessel and may be accompanied by three long blasts on the general alarm and ship's whistle (International Code "O" for overboard). Throw a life ring immediately - preferably one with an attached strobe light or smoke canister (daytime). **Keep the victim in sight as long as possible, point towards them and don't take your eyes off of them.** All persons not on deck should go immediately to the 02 Deck and take lookout positions. If the "man overboard" was not witnessed, it is critical to determine when the person was last seen in order for the ship to begin search and recovery operations at the position where the person most likely was lost.

5.0 Fires

5.1 Fire on board ship is always serious and much more difficult to bring under control than fire on shore. It is, however, a hazard that is most easily prevented by the use of common sense and adequate precautions. Notify the Bridge immediately if you discover a fire, no matter how small.

5.2 The major cause of fire on board ships is smoking around flammable or volatile materials, smoking in bed, and not properly extinguishing cigarettes. On R/V *Atlantic Explorer* smoking is only permitted on the lee side (downwind) of weather decks well away from flammable or combustible material. **(SMOKING IS NOT PERMITTED INSIDE)**

5.3 The location of all fire-fighting equipment such as fire extinguishers, hydrants, etc. should be noted. These facilities MUST be kept clear at all times and not blocked with gear or clothing.

5.4 Know how to operate and use the fire extinguishers in the lab areas and near your stateroom. Ask the crew for instructions and information if you have any doubts.

6.0 Flammable/Volatile Materials

6.1 Consult the Master of the vessel when flammable materials are brought on board; there are procedures to follow regarding the proper storage of these materials.

6.2 All explosives, special chemicals or flammable material such as laboratory solvents, alcohol, gasoline, or acids should be properly contained, "stoppered", and stored away from flames, sparks or heat. Dispose of flammable wastes properly and frequently. Instructions should be obtained from the Watch Officer before transferring volatile liquids.

6.3 Transfer of petroleum products in or out of any tanks on board shall take place with a deck officer and an engineer in attendance, with both signing the ship's log after the description of the transfer.

7.0 Radioactive & Hazardous Materials

7.1 The following guidelines, along with common sense, should ensure the safe use and storage of these materials. The Master must be made aware at all times of any hazardous materials brought on board. The Master of the vessel may terminate any operations using radioactive or hazardous chemical materials if those operations are deemed to be conducted in an unsafe manner, and will then direct and take the appropriate measures to clean up and secure these materials.

7.2 Before departure of the cruise, the Chief Scientist should be prepared to discuss the Science Party's procedures for the safe handling, usage and storage of these materials and the subsequent waste materials. This should be accomplished through liaison with Marine Technical Services and the BIOS Radiation Safety Officer. R/V *Atlantic Explorer's* Isotope Usage Request Form is provided in Section 505 of this manual.

7.3 All isotope use is confined to the radiation van and designated areas on the main deck. All such operations involving radioactive materials shall be done in a safe and appropriate manner, consistent with accepted best practices for laboratory procedures. No eating, drinking, or smoking will be permitted in such areas. No food or drink for human consumption will be stored in any area where radioactive material or toxic chemicals are stored or used. Appropriate protective clothing should be worn.

7.4 The radiation van should be requested in the Cruise Plan.

7.5 Toxic solutions should be stored carefully and away from ventilator openings that could carry fumes into other compartments. The use of such materials should be under controlled conditions with properly installed fume vents and blowers to exhaust unwanted fumes directly out of the ship. There is a fume hood in the main lab for this purpose. Antidotes should be provided for poisonous chemicals and buffering compounds for acids.

7.6 Set up the work area in such a manner that any accidental spill will result in the material being confined to a small, easily cleaned area, i.e., an absorbent paper sheet in a tray can be used under such work. If a spill occurs, it can be thrown away with the rest of the contaminated solid waste material.

7.7 The Chief Scientist is responsible for the proper disposition of radioactive solid wastes ashore. Do not leave these wastes for the crew or shore support personnel to deal with unless you have made prior arrangements.

7.8 All solid wastes containing radioactive substances are to be stored in separate labeled containers for proper disposal ashore in accordance with BIOS policy.

7.9 Report all spills or accidents to the Master immediately.

7.10 Prior to being allowed to use isotope on the vessel, all isotope users shall be identified and their training verified as appropriate for the task.

7.11 The Marine Technicians shall periodically schedule isotope SWAB studies in conjunction with the University of Miami's Tritium lab and in accordance with UNOLS policy.

8.0 **Diving Operations**

8.1 Diving operations are not normally supported on R/V *Atlantic Explorer*.

8.2 If there is a requirement for diving operations, the BIOS Dive Safety Officer must be consulted and approve all dive plans. All diving operations shall follow American Academy of Underwater Scientists (AAUS), BIOS and UNOLS Research Vessel Safety Standards. The Principal Investigator will forward all diving forms and verification of diving credentials to the BIOS Dive Officer 2 months prior to the cruise.

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9.0 Personal Safety

9.1 We highly recommend that all members of the Science Party become familiar with the **RVOC Safety Training Manual, Chapter 1:** http://www.unols.org/publications/manuals/safe_man.html All UNOLS vessels follow these uniform safety procedures.

9.2 All ship's users will be briefed on the location of all life rings, life jackets, immersion suits, life rafts and work vests. Personal Protection Equipment (PPE) is required in certain areas of the main and 01 decks during science operations. Personal Protection Equipment includes hard hats, work vests, hearing protection, safety glasses, gloves, protective outer wear and safety shoes or boots depending upon the nature of the work being conducted. Work vests MUST be worn when working where lifelines and bulwarks have been removed to permit the deployment of scientific equipment. Hard hats are required during any operations involving overhead crane or "A" frame work. The use of safety shoes and boots is recommended when handling heavy equipment. **Shower clogs, flip flops, sandals and bare feet are not permitted on deck.**

9.3 Stand clear of all wires, ropes and blocks which are under stress or are moving, and do not get caught between a swinging object and a stationary part of the ship. Do not stand in the danger zone beneath wires, blocks or suspended weights. Be mindful of all activities going on when walking out on deck. **Stay alert!**

9.4 Be especially careful when entering doorways. Keep fingers away from knife edges of steel water-tight doors. Fingers have been lost when a ship takes a sudden roll and pinches them between a swinging door and its frame. All doors and hatches should be secured either open on their hooks or completely closed and dogged shut. Doors should not be allowed to swing free with the roll of the ship.

9.5 Each individual should check their own safety gear before use and immediately inform a crew member if any items are not serviceable. **Be sure to read the Station Bill for emergency instructions.**

9.6 When going on deck alone whether during the day or night the wheelhouse should always be notified. When on deck alone at night, the buddy system must be used and the buddy system is good safety practice anytime you are alone.

9.7 The wheel house should always be notified and the buddy system used when working in any of the science laboratory vans or onboard containers.

9.8 At any time and for any reason, the Master may secure access to all decks particularly in the event of heavy weather.

10.0 General Information

10.1 Before putting anything over the side, obtain permission from the Deck Officer. To avoid confusing the winch operator, only one person should direct the hoisting or lowering of a load. Use standard hand signals.

10.2 See **DRAWING OF HAND SIGNALS** in Appendix Section 800.

10.3 Permission of the Watch Officer MUST be obtained each time before going or working above the Bridge (03) deck. The ship's motion makes working aloft hazardous, and radio/navigation equipment emitting RF and microwave energy is dangerous to human health. The ship can provide safety belts and fall protection gear, which should be used whenever possible. Do not climb the mast unless you have a specific job to do and **obtain prior authorization from the officer on watch.**

10.4 If you need tools ask the Bosun or Watch Officer. Return all tools immediately after use. Consult the ship's crew if you wish to use a piece of equipment with which you are not familiar.

10.5 Protect the ship from damage when handling gear. Try not to scar decks, paint and woodwork.

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1.0 Arrival/Departure of Scientific Personnel at BIOS

1.1 Scientists needing time at the dock to prepare for a cruise or demobilize at the end of a cruise should make arrangements for room and board with Jane Burrows, Housing and Reservations Manager. jane.burrows@bios.edu

1.2 The scientific party will normally board the vessel on the day of departure from port and depart from the vessel soon after arrival back in port. Persons on two or more consecutive cruises (or legs) may berth on board. Meals are not served in port under normal circumstances.

1.3 In unusual circumstances it may be possible to board the vessel the night before departure or the night after arrival, but this MUST be arranged well in advance with the Marine Superintendent and the Housing and Reservations Manager. This might be possible if it can be shown that no BIOS or local Hotel space is available. Meals and accommodations will be billed at the prescribed BIOS rate as per the current BIOS Fee Schedule.

2.0 Meals

2.1 Meals are served buffet style. A reasonable choice of food is provided. Take all you want, but eat all you take. To be considerate of others, come to meals as neat and clean as possible. Shirts and shoes are required in the mess room.

2.2 Meal hours are posted in the mess room but can be altered within reason subject to the scientific party's requirements and notification.

2.3 When you have completed your meal, dishes and utensils should be cleared from the tables to make room for someone else.

2.4 Those with special food problems such as allergies or dietary restrictions should consult with the Marine Superintendent well in advance of the cruise; there is a limited capability to cope with special cases. If required, the Chief Scientist should complete the Special Needs section of the Pre-Cruise Planning form and the individual should also provide this information on their Personal Information and Waiver Form.

3.0 In Between Meals-Snacks

3.1 Sandwich making materials, snacks, and leftovers are available. Use only what is provided. All plates, cutlery, cups etc. are to be washed when used outside normal meal times. Please clean up any mess you make.

4.0 Scientific Quarters

4.1 Berthing is assigned after consultation with the Chief Scientist. Any special berthing requests must be made at least a day before departure.

5.0 Showers and Marine Toilets

5.1 While the R/V *Atlantic Explorer* makes an adequate supply of fresh water for most needs, conservation of water is necessary. Use of "navy" type showers, i.e. rinse-soap-rinse, turning water off between times, is proper on board ship.

5.2 Leaky faucets, shower heads or toilets should be reported to the Watch Officer immediately. Please wipe around sink and shower after use.

5.3 The ship's sanitary system cannot accommodate foreign objects such as sanitary napkins or paper towels. Use of proper disposal containers is mandatory; i.e. wastebaskets, etc.

6.0 Linen

6.1 Clean towels and bedding are distributed by the Ship’s Galley Personnel only. At the termination of a cruise, used bunk sheets and towels should be placed in a used pillow case and delivered to the laundry area just aft of the galley.

7.0 Clothing/Foul Weather Gear

7.1 It is recommended that you bring enough **appropriate** clothing for your needs to cover the duration of the cruise. Foul weather gear should also be included as the vessel does not provide these items. Rubber boots or shoes with rubber soles should also be used, especially on wet decks. No open-toed shoes will be allowed on outside decks.

8.0 First Aid

8.1 First Aid supplies and common medical remedies like aspirin, acetaminophen, cough syrup, etc. are available. These are under the control of the Master.

8.2 Injuries or medical emergencies must be immediately reported to the Master.

8.2 NSF has contracted with Medical Advisory Services/ MedAire (MAS) to provide immediate medical advice via SSB radio, satellite phone or email. MAS is staffed, 24 hours a day, by medical response teams consisting of physicians, physicians' associates and communications coordinators. Its' primary focus is to provide prompt professional medical consultation to those in the isolated marine environment.

9.0 **MAL-DE-MER!! (Sea Sickness).** Persons should take advantage of the various drugs available to combat it. Staying on deck is preferable to going below, and a small, easily digested meal prior to departure is an advantage. Bring your own remedies (pills, patches) as these are not supplied.

10.0 Prohibited Items

10.1 R/V *Atlantic Explorer* has a policy of "**Zero Tolerance**" towards illegal drugs and alcohol.

10.2 BIOS is committed to maintaining a drug free work place and a safe and healthy work environment for all employees. This policy applies to the R/V *Atlantic Explorer* and its users as well. All employees or personnel embarked are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or controlled substances on board ship or in other BIOS work places. The possession or use of all illegal drugs and substances is strictly prohibited on board ship. It is a violation of Bermuda and US law. Since the R/V *Atlantic Explorer* is U.S. registered and a designated oceanographic research vessel, it must comply with the regulations of the US Government. Discovery of even trace amounts of illegal drugs by US or Bermuda Officials could result in the vessel being impounded and some or all persons on board being arrested. Because of the serious consequences of even minor drug violations the following procedures shall be enforced:

10.3 The Master shall exert every effort to prevent illegal drugs or substances from being brought on board ship. Unannounced and thorough searches of the ship, including staterooms and personal effects, will be made when deemed

necessary and the results of these inspections entered into the ship's official log book, as required by US, Bermudian and International laws.

10.4 Any illegal drugs or substances discovered by the Master, or other ship's officer, will be confiscated and placed in the Master's safe keeping. Complete details concerning the amount and type of drugs, how, when, and where they were discovered, together with the offender's name, will be entered in the ship's log. Upon arrival in port, the offender(s) and drugs will be turned over to the appropriate authorities.

10.5 It is worth noting that all officers and crew members are subject to random drug testing in accordance with existing laws. Anyone who fails to submit to a test, or who takes action to invalidate the results of a test, may be discharged.

10.6 The use of drugs and/or alcohol *does* affect the *way* you perform. A functionally impaired individual is dangerous.

11.0 **Restricted Areas**

11.1 The following areas have restricted access and should only be entered with the knowledge and approval of the appropriate crew member.

- Any area above the 02 Deck including the Bridge and Mast Deck.
- When entering or leaving port and when deploying, working and recovering scientific instrumentation, the bridge is an area of intense activity. Access to this area by scientific personnel should be coordinated with the Watch Officer.
- Captain’s Office and Technical Services Office.
- Bosun’s Locker and all food storage areas, including the pantry and the walk-in cooler.
- Any area below the main deck including the Engine Room. No admission to any of the spaces below the main deck is allowed without the permission of the Chief Engineer or Master, and an escort is required.
- Any space marked “Restricted Access”.

12.0 Cleanliness

12.1 The need to keep an orderly "house" and maintain cleanliness is obvious. Common sense and a consideration for fellow shipmates will provide for a more constructive cruise and more pleasant surroundings.

12.2 Scientific equipment not in immediate use should be stowed and secured in its proper place. The Chief Scientist will assign members of the scientific party to monitor the cleanliness of the labs and deck and take appropriate action.

12.3 Debris should be picked up immediately and placed in proper containers. Clothing and personal gear should be kept in the bunk area.

12.4 Common courtesy requires members of the ship's party to pick up after themselves. Stow all personal gear; keep shoes and rain gear off the bunks.

13.0 Post Cruise Cleanup

13.1 Before departing the ship and in order to provide clean living quarters and laboratory facilities for the next scientific party, it is necessary for each occupant to clean their bunk and lab areas.

13.2 Bunks MUST be stripped of linen and blankets folded and placed at the foot of the bunk. Sinks, mirrors, and bulkheads should be wiped down with any spots or stains removed.

13.3 Remove all instruments and equipment from the laboratories except that which is required on the next cruise. Pick up debris, sweep the floors and empty trash cans. The crew will provide cleaning equipment.

14.0 Interpersonal Relations

14.1 Confined spaces, isolation, and intimate living conditions present a social environment on board a research vessel that is considerably different from that on shore. The close quarters demand utmost consideration of others at all times. Privacy is greatly reduced and, as a result, interactions can become intense.

14.2 Instances, which under normal circumstances could be annoying, can take on exaggerated proportions in a shipboard environment. Individuals should be

alert to this sensitivity. Personal habits and mannerisms could be annoying to others who, by virtue of the circumstances, must maintain a close association both in a working and off-work environment.

14.3 Be considerate of others. At all times, off watch personnel may be sleeping. Avoid excessive noise, loud music or letting the doors slam.

15.0 Sexual, Racial, and Other Unlawful Harassment Policy

15.1 BIOS is committed to providing a work environment that is free from discrimination and unlawful harassment of any kind. Actions, words, jokes, gestures, or comments based on an individual's sex, race, ethnicity, age, religion, disability, marital status, nationality, or any other legally protected characteristic will not be tolerated.

15.2 Sexual harassment is a form of misconduct that is demeaning to another person and undermines the integrity of the employment relationship. It is the policy and practice of BIOS to strictly prohibit any conduct which constitutes sexual harassment (both overt and subtle) and to discipline anyone guilty of engaging in such conduct. Sexual harassment may include unsolicited, offensive behavior such as sexual advances, requests for sexual favors and any other verbal or physical conduct of a sexual nature (including, but not limited to, sexually explicit language, jokes, gestures, suggestive or insulting sounds, written and/or electronic communications, etc.) when:

- The person must submit to the offensive conduct as an explicit or implicit condition of employment.
- The person rejects advances and risks losing a job, promotion, privileges, or benefits; whereas the person who submits gains favors and advantages.
- The person's job performance is interfered with as a result of offensive behavior or the work atmosphere becomes hostile or intimidating.

15.3 If anyone feels they are being harassed or that someone else may be, they should immediately report this conduct to the Master or Marine Superintendent. Anyone engaging in sexual or other unlawful harassment will be subject to disciplinary action, up to and including termination of employment or prohibition from participating in any future research cruises.

15.4 Crew members receive sexual harassment awareness training as part of their International Maritime Organization (IMO) Standards of Training, Certification and Watch Keeping (STCW) certification.

15.5 UNOLS Research Vessel Safety Standards require all Chief Scientists to have participated in harassment awareness training.

16.0 General Information

16.1 Do not use stateroom bedding, furniture, life jackets on deck for sunbathing or uses other than for what they were intended.

16.2 Do not sleep in the Lounge.

16.3 Do not bring food into the Lounge.

16.4 Do not bring food into the Labs.

16.5 Follow posted instructions for disposal of garbage. **It is a violation of International Marine Law to dispose of plastics at sea**. No garbage or trash is to be thrown overboard unless permission is received from the Watch Officer and records are made in the Garbage Disposal Log.

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Policy For Cruise Participants Under 18 Years of Age	S. Brittner	2	330
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1.0 PURPOSE

1.1 Unique among oceanographic research vessels, the R/V *Atlantic Explorer* has a classroom and educational space for students. These amenities provide exceptional opportunities for students under the age of 18 to experience sea-going life and to participate in certain aspects of research cruises.

1.2 The information in this section is designed to provide information to educational group leaders on BIOS policies and procedures required for the safety of all cruise participants and to assist with the planning of valuable educational experiences.

2.0 POLICIES AND PROCEDURES

2.1 Upon proposing a trip on the R/V *Atlantic Explorer* with participants under the age of 18 (U-18), the proposing entity must notify Marine Operations (marine@bios.edu), the PI and Chief Scientist of the number of students and supervisors requesting a place on the cruise, and provide appropriate personal details of the proposed participants two weeks in advance of the cruise.

2.2 Details required include:

- Physical handicaps for which *R/V Atlantic Explorer* needs to provide accommodation (i.e. wheelchair access, blindness, hearing impairment, etc.).
- Medical conditions which may be exacerbated by shipboard conditions, stress, and/or motion.
- Any medications which if not taken, or if taken in overdose, would require immediate medical intervention and/or a return to shore (and loss of an operational sea day for the PI).
- Food allergies.
- Religious or other food related prohibitions.
- Note: we can't always meet special requirements (e.g. Kosher, Halal and galley free of all allergens such as peanut products) and so we may be unable to cater for some participants.

2.3 The Chief Scientist is advised to make contact with parents of U-18 participants prior to the cruise as suitable.

2.4 Participants under the age of 16 (U-16) must be accompanied by a parent or legal guardian.

3.0 LIABILITY

3.1 A Personal Information Form and a Release and Assumption of Risk Form for all U-18 participants (including chaperones) must be completed, signed by a parent or guardian, and returned to Marine Ops at least 24 hours prior to departure.

3.2 Potential U-18 participation on cruises aboard the R/V *Atlantic Explorer* are viewed on a case-by-case basis. The Captain of the vessel, the PI of the project and the Chief Scientist of the cruise may veto any U-18 participation on proposed cruises.

4.0 PERSONAL FLOATATION DEVICES (PFD'S)

4.1 The correct number of life jackets to fit all participants must be confirmed with Marine Operations in advance of the cruise; a limited number of "Child"-sized life jackets are available on the ship.

5.0 ACTIVITY SCHEDULE

5.1 All groups must have a pre-approved activity schedule, created through liaison with the PI and Chief Scientist, and distributed to Marine Operations, PI and Chief Scientist two weeks prior to the cruise. "Sightseeing" does not qualify as a suitable activity; trips on the R/V *Atlantic Explorer* are limited to Science and Education purposes only.

5.2 The best way to engage students, avoid sea sickness and reap the most benefit from a cruise is to have students participate as fully as possible.

5.3 A detailed list of planned activities must be prepared in advance and discussed with the chief scientist.

5.4 Any requests for additional science activities (net tows for example) must be requested well in advance.

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6.0 ADULT SUPERVISION (CHAPERONES)

6.1 Chaperones may be teachers, parents or other responsible adults as follows:

- The Chief Scientist of the cruise cannot be the designated supervisor. At least one of the supervisors on either day or overnight trips must be a current ocean-going BIOS staff member.
- Chaperones must be familiar with BIOS U-18 requirements.
- Chaperones are personally responsible for the behavior and actions of the students they are supervising.
- They must be able and willing to ensure student compliance with ship board regulations.
- Chaperones with sea experience (less likely to suffer from seasickness) are strongly recommended.
- A minimum of 1 chaperone to 5 students is required for any group of U-18 Participants, with no less than 2 chaperones onboard for the duration of the cruise.
- The Chief Scientist is responsible for ensuring that supervisors are maintaining their role, and determining the suitability of proposed supervisors once above conditions are met.
- Special circumstances will be considered on a case-by-case basis.

6.2 Day Trips:

- For day trips, one adult supervisor is required for every five U-18 participants, with no less than two supervisors.
- The maximum number of participants on a day trip is not to exceed 25 members including students and required chaperones. Availability of space on board is at the discretion of the Chief Scientist and BIOS Marine Operations, with priority being given to researchers and scientific personnel.
- A minimum of 1 chaperone to 5 students is required for any group U-18 Participants. A ratio of 1:4 is recommended.

6.3 Overnight Trips:

- Overnight trips will be considered on a case-by-case basis.
- Two supervisors are required for each overnight U-18 participant, with 24 hour supervision enforced.
- At least one supervisor must share the cabin with U-18 participants.

7.0 BIOS REPRESENTATION

7.1 The Chief Scientist is in charge of science on the cruise and his/her decisions and directives must be adhered to by leaders of the educational group. An additional BIOS representative (other than the chief scientist) must be in charge of the educational group.

8.0 PRE-CRUISE ORIENTATION AND SAFETY BRIEFING

8.1 All participants must attend a pre-cruise briefing scheduled no less than one day prior to the cruise, at which time all paperwork must be submitted and safety procedures reviewed.

8.2 The following safety and vessel procedures will be addressed during the U-18 pre-cruise briefing:

- Location and use of personal floatation devices
- Emergency Muster Station
- Launching and boarding of life rafts
- Procedures in case of fire
- Man overboard
- Medical emergency (all injuries or medical problems must be reported to the Master immediately)

- Vessel hazards (tripping hazards, lines, deck machinery, ladders, stairs, doors and hatches, Etc.)
- Restricted areas
- Meals
- Personal responsibility and behavior
- On-board culture (water use, operation of heads, personal space, noise, respect, chain of command)

9.0 CRUISE ACTIVITIES AND LIFE AT SEA

9.1 Science First

- A single day's cruise aboard R/V *Atlantic Explorer* costs a scientist as much as $25,000.
- Much effort goes into writing proposals and collaborating with colleagues to earn the necessary funding and to make scheduling arrangements for a cruise.
- It is very important therefore that all U-18 cruise participants recognize that the primary scientific research goals take priority on board.
- The chief scientist is responsible for the success of the scientific research and any requests for additional activities must take a second place.
- It is important that all U-18 cruise participants are aware that they must not impede or interfere with the primary research projects.

9.2 Sea sickness

- Almost everyone who goes to sea feels the effects of seasickness at some time.
- Students and chaperons who are prone to seasickness are strongly

discouraged from participating on a cruise if the weather forecasts suggests rough seas; this is both for their own health and comfort, as well as to ensure that no emergency medical problems interfere with the cruise's research aims.

- Students and chaperones that are prone to seasickness should research, practice with and take prophylactic medication prior to a cruise, even if the forecast is mild.

- Cruise participants feeling ill should stay in fresh air, eyes on the horizon, preferably on a lee deck. It is important that they stay hydrated.

- Members of the educational group must take responsibility for the patient and report to the chief scientist / mate if the situation becomes serious (dehydration leading to volume shock).

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Section 500 **Forms**

*All forms in this section are fillable pdf forms which should be **completed digitally and returned via email** to the appropriate department. MAC users may find that the data on the form will disappear when saved; however, it is in fact still available on the form when it is received by the appropriate department.*

501 UNOLS SHIP TIME REQUEST
502 PRE-CRUISE PLANNING FORM
503 CRUISE PLAN
504 HAZMAT FORM
505 ISOTOPE USAGE REQUEST
506 BIOS WAREHOUSE STORAGE REQUEST FORM
507 POST CRUISE ASSESSMENT
508 PERSONAL INFORMATION FORM
509 MEDICAL HISTORY & INFORMATION FORM
510 RELEASE & ASSUMPTION OF RISK FORM

Section 600 **SHARED USE EQUIPMENT**

Section 700 **DRAWINGS**

701 R/V *ATLANTIC EXPLORER* General Arrangement Drawings
702 Rad Van Simple Drawing
703 Danger Zones

Section 800 **REFERENCES**

810 HAND SIGNALS for Weight Handling Equipment
820 Marine Science Research Authorizations

Section 900 **BIOS FEE SCHEDULE**

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UNOLS Ship Time Request & Scheduling System	S. Brittner	3	501
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Go to the following UNOLS website for instructions on how to log into and use the UNOLS Ship Time Request & Scheduling System:

http://unolsweb.cms.udel.edu/strs/Public/diu_login.aspx

Once you have submitted a Ship Time Request (STR) we receive an email from UNOLS indicating this and put you in our Proposed Schedule as a cruise awaiting funding from NSF.

When your work is funded, complete the Pre-Cruise Planning Form and submit it to the Marine Operations Department at the following email address: **marine@bios.edu**

R/V ATLANTIC EXPLORER PRE-CRUISE PLANNING FORM

Instructions: *Please complete this form and email to: marine@bios.edu 90 days in advance of the cruise.*

Name: _____

Chief Scientist: _____

Principle Investigator (Ancillary User): _____

Address: _____

Phone#: _____ Email: _____

Scientific Title, Purpose and Description of Project: _____

_____

_____

_____

UNOLS Ship Time Request (STR) Status:

Funded? ☐ Not Funded? ☐

Sponsoring Agency? _____

Grant or Contract Number: _____

Current Year Funding $ _____

Financial Information:

Payment Method - Cruise Expenses: Purchase Order ☐ Credit Card ☐ Other ☐

Method of Payment Additional Details: _____

ANCILLARY USERS – The following information must be provided for all ancillary projects and users.

Project Title: _____

PI: _____ Phone #: _____ Email: _____

Address: _____

Institution: if more than one list primary institution _____

Sponsoring Agency: _____

Grant # if available: _____

Names and positions of all participating individuals: _____

_____

_____

_____

_____

PRIMARY PROJECT REQUIREMENTS:

Number of ship days: _____

Number of dock days before cruise: _____

Number of dock days after cruise: _____

Requested Cruise Dates: _____

Acceptable Alternatives: _____

Area of Operations: _____

_____

_____

Describe Requirements for Cruise Mobilization and Demobilization (Number of days; Dockside testing of equipment? Will you need a fork truck or dockside crane, etc.?):

Diving: Yes ☐ No ☐

Shipboard Equipment and Instruments Required:

XBT: Yes ☐ No ☐

Any Special Electrical Requirements?

Raw Sea Water Hook up? Yes ☐ No ☐

Supporting Personnel Required From Ship (Technicians/Deck Hands):

Underway and/or Station Requirements (Attach Sampling Plan if Available):

SURFACE DEPLOYED EQUIPMENT (FLOATING ARRAYS):

Do you intend to deploy surface floating equipment? Yes ☐ No ☐

Note: All floating arrays deployed from R/V *ATLANTIC EXPLORER* must be fitted with a radio beacon and a strobe light.

ACOUSTICS:
Do you plan to use undersea sonic emitters, dragged devices or explosive charges?

Yes ☐ No ☐

If yes, the BIOS Marine Superintendent is required to forward such information to the Commander, Naval Oceanographic Command at least two weeks prior to any such operation.

HAZARDOUS MATERIALS AND CHEMICALS:

Do you plan to have equipment or materials on board which are flammable, explosive, toxic or radioactive?

Yes ☐ No ☐

A Material Safety Data Sheet must be provided listing all hazardous, chemical and radio active material that will be brought aboard and used on the cruise. You must also provide chemical spill clean-up supplies adequate to respond to your worst case possible spill.

No.	Item	Qty on Board	Location

If more space is needed to list hazardous materials, please attach a separate page.

A completed HazMat Form (CM Sec 504) must be submitted prior to departure.

Cruise Plan Personnel List

Please list below, all members of your science party noting the status of each person: Chief Scientist, Scientist, Post – Doc, Graduate, Undergraduate or K-12 Student, Observer, Foreign Observer, K-12 Teacher, Higher Education Instructor or Technician.

No.	Full Name	Status on Cruise	Institution
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			
16)			
17)			
18)			
19)			
20)			

Each person must complete a Personal Information Form (CM Sec 508) and a Release and Assumption of Risk Form (CM Sec 510). Both forms are fillable pdf forms and after being completed digitally should be emailed to marine.operations@bios.edu

If there are any special dietary needs of which R/V *Atlantic Explorer* should be made aware, please ensure this information is provided in the Special Needs Request section below.

Special Needs Request:

Name of Chief Scientist/ Cruise: _____

Instructions: For each category, list name(s) and information

SPECIAL DIETARY NEEDS

The R/V *ATLANTIC EXPLORER Galley provides 3 delicious, nutritious main meals daily while at sea. Our cook can accommodate any special dietary requirements if given advance notice.*

Food Intolerances/Allergic reactions (Provide names and details)

_____

_____

_____

Religious Restrictions (Provide names and details)

_____

_____

_____

Vegetarian (Vegan) (Provide names and details)

_____

_____

_____

_____

Any additional information:

_____

_____

_____

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Here is an example of what is required in your Cruise Plan. Note that the cruise is uniquely identified so it can't be confused with any other cruise. It includes the following important information:

- Cruise identification
- Dates of Cruise
- Name of Chief Scientist
- Cruise Objectives and Activities
- Lab Space and Equipment Assignments
- List of all science personnel with their status and institutional affiliation
- List of all science stations with Lat/Long coordinates
- Proposed Daily Schedule

Your cruise plan is important. Days before your departure the crew relies on it to prepare the ship. The galley must know how many people they will be feeding; bunks in staterooms must be prepared; all science equipment requirements must be confirmed; Station waypoints are programmed into the chart plotting system and the overall plan checked by the Master and Marine Techs to be sure your work can be completed safely and successfully. Once your cruise begins, it is important to keep your plan edited and updated on a daily basis. Remember – The posted plan in the wheelhouse is the one that is followed by the Watch Officer and Marine Technicians. After the cruise, the Marine Operations Office uses the plan to prepare the NSF Ship Utilization Report.

EXAMPLE OF CRUISE PLAN

Cruise schedule BATS 236 – Leg 2

(25th to 29th June 2008 - R/V Atlantic Explorer)

Cruise Objectives/Activities:
BATS : CTD, Sediment Traps,
Kadko (Stephens): in-situ 7Be pumping
Buesseler (Valdes,McDonnell, Owens, Marinov) : NBST, VPR, RESPIRE, in-situ pumps

Lab Space & Equipment Assignments:
BATS : Main, Fumehood, Isotope ; moorings main deck; lines on TSE & Rowe winch

Science Personnel	**Institute (project)**
Rod Johnson (CS)	BIOS(BATS)
Jonathan Whitefield	BIOS (BATS)
Brad Issler	BIOS (Lomas, NBST)
Amanda Burke	BIOS (Lomas, NBST)
Mark Stephens	RSMAS
Stephanie Owens	WHOI
Irina Marinov	WHOI
Jim Valdes	WHOI
Andrew McDonnell	WHOI
James Caison (MT)	BIOS
Ron Zimmer (MT)	BIOS

Station	**Latitude**	**Longitude**
Sediment Trap Deploy	31° 35.00' N	64°10.00' W
BATS	31° 40.00' N	64°10.00' W
Hydrostation 'S'	32° 10.00' N	64° 30.00' W
1	31° 47.91'N	64° 44.67'W
3	32° 09.51'N	64° 00.61'W
13	31° 32.10'N	63° 35.70'W
11	31° 10.50'N	64° 19.46'W

Day 5: Wednesday 25th June
(Local Time)

1300 Depart BIOS for PITS deployment site (31 35n, 64 10W)
1900 Arrive PITS deployment commence deployment of TRAP arrays
1) 150m RESPIRE/CLAP
2) BATS sediment TRAPS (350m)
3) BATS/Neuer TRAPS (350m)
4) 4 NBST Arrays

Day 6: Thursday 26th June

0200 Depart for BATS
0230 Kadko pump #1 – BATS
1130 Depart for RESPIR Array(s)
1230 Commence diel VPR casts
VPR diel #1
1630 VPR diel #2
1730 In-situ pumps (Owens)
2030 VPR diel #3
2130 Recover Neuer Trap array

Day 7: Friday 27th June

0030 VPR diel #4
0100 CTD (3000m , Buesseler U/Th)
0430 VPR diel
0530 Depart for spatial station for Kadko pump
0900 Kadko Pump #2
1800 Depart for Hydrostation 'S'

Day 8: Saturday 28th June

0300 Arrive at Hydrostation S
Kadko Pump #3
1200 Depart for sediment TRAP arrays
1800 Proceed with Recoveries

1) BATS TRAP array
2) 150m RESPIRE/CLAP
3) NBST's

Day 9: Sunday 29th June

0200 Depart for North spatial station
0500 Kadko Pump #4
1400 Depart for Pilot Station
1730 Pilot Station
1830 BIOS, unload ancillary groups.

R/V Atlantic Explorer

Hazardous Material Information Form

RVAE_CM_504_Hazardous Material Information Form

Cruise ID or Name | Current Date | Chief Scientist | Location of Haz-Mat

	UN or CAS Number	Chemical Name / Common Name	Type and Classification	Size and Quantity	User Name and contact
1					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
2					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
3					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
4					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
5					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
6					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
7					
	☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded				
8					

☐ MSDS Provided ☐ Spill Response kit Provided ☐ Material Was Exhausted at Sea ☐ Material has been offloaded

☐ I have read the RVSS and Ships Cruise manual sections on Hazardous Material use on ships

Your Name

R/V *ATLANTIC EXPLORER*

Request for Isotope Use on Vessel

Chief Scientist:	Primary Project Name:
Cruise Number:	Ancillary Project name:
Cruise Dates:	Funding Agency:

Institution:	Telephone:
PI Name:	Email:
Authorized User Name:	Email:

In the table below provide the information for each Isotope you are requesting to use. At this time, BIOS only has permits for C14, H3 and S35. For a Sealed Source (SS) isotope - in addition to this form provide the manufacturer's name, model, serial number, specifications and date of the most current leak test. Describe the device and how/where it will be used.

Isotope Name	Activity (mCi)	Physical form (sol, Liq, Gas, SS)

Protocol – Describe in detail the protocols for each isotope being requested for use. Alternatively, you may also email your protocols to ship.tech@bios.edu

Location – All isotope use on the R/V *Atlantic Explorer* is confined to the UNOLS Shared Use Isotope Van. If additional locations are being requested contact ship.tech@bios.edu well in advance of the cruise dates.

Authorized User – Provide a description of your current level of Radiation Safety Training including dates and training facility. Indicate all previous experience with the isotopes including quantities, activities and a brief description of protocols and procedures. Include any information that you feel will help the Radiation Safety Committee evaluate your request.

BIOS Marine Warehouse Storage Request Form

Storage is limited, inquire in advance – Contact ship.tech@bios.edu

Date: _____

Primary Project Number or Name: _____ Funding Agency: _____

Ancillary Project Name: _____ Funding Agency: _____

Responsible Person Phone & Email _____

Name, address and Institute of
Party responsible for billing:

_____

_____

Method of Payment:

☐ BIOS Account # _____ ☐ Credit Card - Provide details when invoiced

☐ Invoice the following email address: _____

Charges (if applicable):

_____

Please list contents / items on Storage Details form – next page.

COMMENTS: _____

_____

☐ *** I confirm that all flammable and/or hazardous material has been documented and described on the Storage Details form****

☐ *** I understand that Hazardous Materials must be stored in accordance with BIOS policy. Hazardous Materials will not be stored in the Marine Warehouse. Non-compliance with this policy will result in clean-up and/or disposal fees being levied****

_____ _____

Signature or Scientist / Technician Signature of Receiving Agent

STORAGE DETAILS

Scientist/Project:			**Warehouse Use Only**	
BOX #	DESCRIPTION / CONTENTS OF ITEM / BOX	FT^3	**ID #**	**POSITION**

Title:	Prepared By:	Revision No:	Section:
Post Cruise Assessment	S. Brittner	3	507
	Approved By:	Edited:	Page:
	R. Harelstad	10/08/2012	1 of 2

UNOLS Post-Cruise Assessment Report Form

Please complete a post cruise assessment as soon as possible after the completion of your cruise.

The revised on-line form is easy to use and is found at: http://strs.unols.org/Public/

This assessment of the research cruise you just participated in is part of a program to evaluate how well vessels and personnel of the academic research fleet are supporting the scientific objectives of the research community, and to identify areas that may need better support or guidance to improve the success of future projects.

Information provided in this form will be used by:

- Operating Institutions, Ship's Crew, and Technical Support Personnel
  - To make improvements to equipment and procedures on their vessels.
- UNOLS Office
  - To track the overall performance of the academic research fleet.
- Funding Agencies
  - To assess areas that require more attention.
- Yourself
  - To make constructive suggestions for improvement that will benefit future research projects for yourself and your colleagues and to let ship operators know what they are doing well.

Once you complete and submit the form, an email will be sent to:

- UNOLS office,
- Marine Operations Office of the ship your were embarked on,
- PI for the project (email entered in box 11a),
- Facilities Program Managers at the Federal Funding Agencies, and
- You will also receive a copy of the completed evaluation by email.

If you are a member of the STRS system and log in to complete this form, you will have the ability to save a partially completed PCAR for later editing and submission. If you are neither a member nor logged in, then data entered on this form is not saved on the server for future editing or once the mail is submitted. If you need to create a draft version(s) of your comments, we recommend creating a text file, and pasting into the text boxes on this form.

The research vessels operators, federal funding agencies and UNOLS expect and very much appreciate your honest feedback. Thank you for participating in our quality

improvement program. To learn more about this program go to: http://www.unols.org/issues/quality/Quality_of_Service.html.

R/V *ATLANTIC EXPLORER* Personal Information Form
Please complete & submit ELECTRONICALLY

Title & Full Name _____ **Sex M** ☐ **F** ☐ **Phone (Bus.)** _____
(SURNAME, GIVEN NAME & MIDDLE NAME)

Affiliation (Inst./Employer) _____ **Email** _____

Position on Cruise _____ **Student? Please check: Grad** ☐ **Undergrad** ☐

Business Address _____

Nationality: _____ **Date of Birth** _____ **Passport #** _____ **Exp. Date** _____

IF APPLICABLE - US VISA # _____ **Expiry Date** _____ **Not Required** ☐

Person to Notify in Case of Emergency _____ **Relationship** _____

Their Address _____ **Phone** _____

CRUISE MANUAL: I have read the R/V *Atlantic Explorer* Cruise Manual YES ☐ **NO** ☐
If NO, please do so before cruise departure. http://www.bios.edu/ship_operations/cruise_manual.pdf

MEDICAL INFORMATION: The undersigned acknowledges that he/she has no physical defects or ailments which would prevent the performance of duties at sea for extended periods of time. If medication is required, adequate provision for a supply of prescription drugs must be made prior to boarding the vessel.

Complete and submit Medical History and Information Form - CM_509

Not Applicable ☐ **OTC & Prescription Drugs (type)** _____
Food Allergies / Dietary Restrictions _____

INSURANCE COVERAGE: Persons on board vessels operated by the Bermuda Institute of Ocean Sciences (BIOS), Inc. who are not employees or students of the Institution are considered SHIPBOARD GUEST INVESTIGATORS and are expected to make arrangements for all forms of insurance coverage while participating in research cruises. BIOS assumes no responsibility for non-employees; each must agree to hold BIOS harmless of all liability arising from participation in any voyage on a BIOS vessel. *Complete and submit Release and Assumption of Risk Form - CM_510.*

ALCOHOL POLICY: No alcoholic beverages of any type will be permitted on BIOS vessels. All personnel, including scientific staff from other institutions and visitors, are affected by this regulation and must abide by it.

DRUG POLICY: BIOS is a Zero Tolerance organization. The possession or use of any controlled substance will not be tolerated. Members of the embarked scientific party are subject to drug and alcohol testing under 46 CFR for reasonable cause and in the event of a "Serious Marine Incident" at the discretion of the Master. In accordance with U.S. and Bermuda Customs, Laws and procedures, the Master can routinely search the ship at any time, including staterooms. This search may include personal effects.

RADIOACTIVE MATERIALS POLICY: No radio isotopes will be permitted aboard ship without express approval from BIOS Radiation Safety Officer.

HAZARDOUS MATERIALS POLICY: Scientists must provide ship with Material Safety Data Sheets (MSDS) for ALL Hazardous Materials.

IF NOT DIGITALLY SIGNED – THIS FORM WILL BE VERIFIED AND SIGNED DURING SAFETY BRIEFING

In signing this document, I acknowledge that I understand and will comply with the stated policies of the vessel as per above; all of which are detailed in the R/V Atlantic Explorer Cruise Manual found online.

Signature _____ **Date** _____

Return this form TWO weeks **BEFORE THE CRUISE BEGINS**. Submit to FAX (441) 297-1839 or email: marine.operations@bios.edu

Title:	Prepared By:	Revision No:	Section:
Medical Forms & Instructions	S. Brittner	5	509
	Approved By:	Edited:	Page:
	R. Harelstad	10/08/2012	1 of 3

MAS Medical Profile (International Travel) Form Instructions

UNOLS vessels typically operate far from the availability and level of medical help people usually take for granted ashore. Individual crew members and scientists must therefore take personal responsibility for their health and safety as much as possible during their time on board. While we make every effort to provide a safe ship and work environment, it must be recognized that work at sea is inherently dangerous. If you become sick or injured at sea it is often critical that your medical history and information is complete, up-to-date and available to the medical personnel and caregivers assisting you.

Research vessels seldom carry a doctor and crew members have minimal first aid training and expertise. For this reason, UNOLS contracts with George Washington Medical., an organization that provides 24/7 access to medical doctors specializing in ship and aircraft medical emergencies through the INMARSAT system or via Sat Phone. The ship carries an inventory of medical supplies recommended by GWM so GWM doctors can provide directions to the care-givers on board for managing the particular emergency.

Filling out and submitting this form is voluntary. However, this information is intended to allow the MAS doctors to provide quick response to any medical emergency you may experience. It is intended for your protection.

Due to privacy provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), no copy will be reviewed at BIOS. It is recommended but not required that you give a copy to the captain at the beginning of your cruise or on an annual basis if you make frequent cruises. If you wish to bring a copy aboard in your personal possession that is your choice.

MAS

Medical Advisory Systems
Maritime Service

SLD 01-11/RO

Medical Profile (International Travel)

CREW MEMBER IDENTIFICATION:

Name: _____ Passport #: _____ Country: _____

Date of Birth: _____ Social Security #: _____

Vessel Name: _____ UNOLS

Organization: _____ Phone: _____ Fax:

E-Mail: _____ Address:

Contact Person: _____

MEDICAL INFORMATION:

Current Medications: _____ Allergies

– Medications /foods /other: _____ Current

Medical Problems: _____

Medical History (Major Operations & Procedures – include dates): _____

_____

Blood Type /Positive or Negative: _____

PERSONAL PHYSICIAN INFORMATION:

Name: _____

Phone: _____ FAX: _____

DENTIST INFORMATION

Name: _____

Phone: _____ FAX: _____

EMERGENCY NOTIFICATION PURPOSES – EMERGENCY CONTACT (only contacted after UNOLS)

Name: _____ Relationship: _____

Phone: _____ Alternate Phone: _____

Medical Advisory Systems, A Service of MedAire
80 East Rio Salado Parkway, Suite 610, Tempe, Arizona 85281
Maritime Services Phone: (480) 333-3700 Maritime Services Fax: (480) 333- 3821
Medical Emergency Phone: (480) 333-3876 E-mail: followup@mas1.com

MAS, A Service of MedAire **Medical Profile Form** SLD 01-11/RO
REV: 04/18/206

IMMUNIZATION RECORDS:
Immunizations marked with an asterisk (*) are required to meet minimum international travel standards. Please provide the most recent date for any of the following immunizations that you have had. One or more of these immunizations may be recommended for people traveling to "high risk" areas of the world.

IMMUNIZATIONS

PRIMARY CHILDHOOD

Diphtheria-Tetanus-Pertussis (DPT)	YES	NO
Polio	YES	NO
Mumps-Measles-Rubella (MMR)	YES	NO

PRIMARY ADULT	Date Rec'd	SECONDARY ADULT	Date Rec'd
*Diphtheria /Tetanus (dT)		Typhoid (if recommended) Choose 1	
*Polio		Oral Typhoid	
*Measles		Typhim Vi (injection)	
*Hepatitis A (after age 18)		Wyeth Typhoid (injection)	
First in Series		Yellow Fever	
Second in Series or Booster		Meningococcal	
Hepatitis B (after age 18 if no previous immunization)		Japanese Encephalitis	
First in Series		Rabies	
Second in Series		Pre-exposure	
Third in Series or Booster		Post-exposure-if had pre-exposure immunization	
Varicella		Post-exposure – if did not have any immunization	
TB Skin Test		Cholera	
Influenza (Flu)		Malaria Prophylaxis	
Pneumococcal		Other:	
Rubella		Other:	

To the best of my knowledge, the above Medical History Information is accurate and complete. I authorize release of this information to Medical Advisory Systems.

In the event of a medical incident, I authorize Medical Advisory Systems to release the information set forth in this form to such health care providers as it may deem necessary; and I direct Medical Advisory Services to notify the persons listed under "For Emergency Notification Purposes" of the occurrence and nature of the incident, recommend medical treatment, and from whom further information may be obtained. Medical Advisory Services may, in its sole discretion, request assistance for me from an international assistance provider or refer my care directly to a physician and/or hospital and/or other medical provider. Medical Advisory Systems may require that any health care provider set forth in the previous sentence furnish reports on my status to Medical Advisory Systems or the international assistance provider. By completing and returning this form, I agree to the above two statements.

SIGNATURE _____ DATE _____

Bermuda Institute of Ocean Sciences
Ferry Reach, St. George, GE 01, Bermuda

Release and Assumption of Risk Form

TO: The Bermuda Institute of Ocean Sciences, its Board of Trustees, Officers, Employees and Agents
("RELEASEES").

FROM: _____

I desire to participate in activities (for example, but not limited to: scientific, research, educational, recreational, volunteer and other activities; hereinafter referred to as the "Activities") in conjunction with the Bermuda Institute of Ocean Sciences; and I fully understand and appreciate certain dangers and risks may occur, including but not limited to hazards of accident or illness, SCUBA diving, snorkeling, transportation by air, land or sea, dock operations, laboratory operations, potential exposure to dangerous weather, animals, plants, minerals, chemicals, equipment, surfaces, furniture, fixtures and fittings, temperatures, radiation and other dangers, hazards and risks inherent in the Activities, including risks associated with the transportation to and from the Activities and risks in any independent Activities I undertake as a participant in the Activities, which could also include serious and even mortal injuries and/or property damage.

Knowing the particular dangers, hazards, and risks of such Activities, and in consideration of being permitted to participate in the Activities, on behalf of myself, my family, heirs, personal representatives, I, the undersigned, agree to assume all the risks and responsibilities involved with and surrounding my participation in the Activities, transportation to and from the Activities, and in any independent Activities undertaken as a participant thereto, and in advance, I release, waive, forever discharge, and covenant not to sue RELEASEES, from and against any and all liability for any harm, injury, damage, claims, demands, actions, causes of action, costs and expenses of any nature that I may have or that may hereafter accrue to me, arising out of or related to any loss, damage or injury, including, but not limited to suffering and death, that may be sustained to me or any property belonging by me, whether caused by the negligence or carelessness of the RELEASEES, or otherwise, while in, on, or in transit to or from the premises where the Activities, or any adjunct to the Activities, occurs or is being conducted.

I understand and agree that RELEASEES do not have medical personnel available at the location of the Activities. I understand and agree that RELEASEES are granted permission to authorize emergency medical treatment, if necessary, and that such action by RELEASEES shall be subject to the terms of this Agreement. I understand and agree that RELEASEES assume no responsibility for any injury, damage or death, which might arise out of or in connection with any attempted emergency medical treatment, including unauthorized, incompetent, incomplete or negligent treatment.

It is my express intent that this Agreement shall bind members of my family and spouse, my estate, family, heirs, personal representatives, or assigns, and shall be deemed as a release, waiver, discharge and covenant not to sue RELEASEES. I further agree to save and hold harmless, indemnify, and defend RELEASEES from any claim by my family or me, arising out of my participation in any Activities.

I understand that the acceptance of this release and waiver of liability by the RELEASEES shall not constitute nor be construed as a waiver, in whole or in part, of any rights by said RELEASEES. I agree that in the event that any part of this Agreement is determined to be unenforceable or ineffective, it shall not affect the continuation and enforceability of other parts of this Agreement as a whole.

In signing this release, I acknowledge and represent that I have fully informed myself of the content of this Agreement by reading it before I sign it, and I understand that I sign this document as my own free act and deed. I understand that the RELEASEES do not require me to participate in any Activities, but I want to do so despite the possible risks and despite this release. I further state that I am at least 18 years of age and fully competent to sign this Agreement; and that I execute this release for full adequate and complete consideration fully intending to be bound hereby.

This Agreement is subject to Bermuda Law and the exclusive jurisdiction of the Courts of Bermuda.

THIS IS A RELEASE OF LEGAL RIGHTS. READ AND BE CERTAIN THAT YOU UNDERSTAND IT BEFORE SIGNING.

PARTICIPANT: WITNESS:

_____ _____

Signature of Participant Signature of Witness

_____ _____

Print Name Print Name

_____ _____

Date Date

Participant Home Address: _____

_____

In case of accident or illness notify:

Name & Address: _____

Phone #: _____ E-Mail: _____

_____ _____ _____

Student (or parent/guardian) signature Date Date of Birth

Title:	Prepared By:	Revision No:	Section:
Shared Use Equipment	R. O'Connell	3	600
	Approved By:	Edited:	Page:
	M. Stain	06/10/2022	1 of 4

1.0 CTD

1.1 (3) SBE 9 (6800 m)
(3) SBE 11+ Deck Unit
(6) SBE 5T pumps (10,500 m)
(7) SBE 3 Temperature sensors (6800 m) -5 to +35 Deg C - ±0.001 Deg C
(9) SBE 4 Conductivity sensors (6,800 m) 0 to 7 S/m - ±0.0003 S/m
(7) SBE 43 Dissolved Oxygen sensors (6,800 m) 120% SSNW - ±2% Saturation
(3) SBE 35RT Reversing Thermometers (6,800 m) -5 to +35 Deg C - ±0.001 Deg C
(2) Chelsea AquaTracka III Fluorometer (6,000 m) Chlorophyll a (430nm excitation, 685nm emission) - ±0.02 µg/l
(3) Wetlabs C-Star Transmissometer (6,000 m) 25 cm path – 650 nm
(3) Valeport VA500 Altimeter (6,000 m) 500kHz – 100m range
(2) Teledyne Benthos PSA-916 Altimeter (6,000m) 200 kHz – 100 m range
(3) Biospherical Instruments QSP-2350 Scalar PAR (2,000 m) 400-700 nm

All data logged and displayed with Seabird V7 Software.

2.0 Rosette/Carousel

2.1 (3) SBE 32 Carousels (6,800 m) 24 positions
(2) SBE modified Rosette frames with lead weights

3.0 Niskin Bottles

3.1 (30) SBE Modified Ocean Test Equipment model 110 - 12-liter water samplers

4.0 Flow-through Seawater System

4.1 (4) SBE 21 Thermosalinographs Temp ±0.0001 Deg C – Cond ±0.0003 S/m
(3) SBE 38 Remote Temperature Sensors ±0.001 Deg C
(3) Wetlabs Fluorometers 0-75ug/L range
(3) Wetlabs C-Star Transmissometers 25cm path, 650nm
(2) Hayward super pump with variable frequency driven motor
(4) Rotocon paddle wheel style flow-meter

5.0 Meteorological

5.1 (5) RMYoung 05106 Marine Anemometers
(2) RMYoung 06206 Marine Wind Trackers
(4) RMYoung 41382 Relative Humidity / Temperature Probe
(3) RMYoung 50202 Precipitation gauge
(3) RMYoung 61301 Barometric Pressure sensor
(2) Biospherical Instruments QSR-2200 Surface PAR
(2) Eppley Labs SPP Standard Precision Pyranometer
(2) Eppley Labs PIR Precision Infrared Radiometer

6.0 Data Management System

6.1 OpenVDM version 2.6 is used to manage the collection and backup of data from the various data servers located around the ship throughout the duration of a cruise. Data is collected every 5mins by OpenVDM and is instantly available for viewing via the web interface to clients on the ships network. The ship has 2 x NAS servers that backup data with RAID 6 protection.

7.0 ADCP

7.1 (1) RDI 75 kHz Ocean Surveyor
(2) RDI Deck Boxes
(1) Trimble ABX-Two HPR sensor – Heading, Pitch and Roll through GPS

8.0 Q-Water System

8.1 (1) Millipore A10 - Producing 18.2 MΩ @ 25 Deg C, TOC <5 ppb, production up to 2 l/min
(1) Millipore Elix5 R/O – Producing >5 MΩ @ 25 Deg C, TOC <30 ppb, production up to 700 l/day
(2) Millipore 100-liter reservoir
(2) 5 Micron spun-polypropylene sediment pre-filters
(1) Little Giant Circulation pump

9.0 Echosounder

9.1 (1) Knudsen 3260 chirp system
(1) ITT Radar Model 6355 12 kHz conical beam transducer 2000 W
(16) Massa TR-1075 3.5 kHz transducers connected in a chirp array 9600 W
(1) Teledyne Benthos 12kHz Pinger

10.0 Nets

10.1 Reserved

11.0 UNOLS Isotope Van

11.1 (1) 20' x 8' - ~160 ft^2 - Built to UNOLS standards
(1) Danby refrigerator 3.2 ft^2 (small form)
(1) Perkin Elmer 2910 TR Tri-Carb® Liquid Scintillation Analyzer
(1) Flow Sciences VBSE FS2400 – 80 ft/min, 7 ft^2 of work surface

12.0 Computers

12.1 IBM Compatible-Pentium class, with networking available throughout ship.

(3) Workstations provided for Science Use with MSOffice and Adobe Acrobat software. Additional Ethernet connections are available in the teaching lab. Other locations and configurations are possible upon request.

13.0 Internet

13.1 (2) Intellian V150NX domes with Ku-Band (Vsat)
(1) Iridium Certus

The ship's primary internet is a Ku band (Vsat).
The ship's backup system is Iridium Certus

13.2 (1) Thrane & Thrane TT500 INMARSAT stabilized Antenna, Modem and Voice

This INMARSAT system utilizes the I-4 generation of satellites for seem-less

global coverage at less than 75 Deg of latitude. The system handles simultaneous voice and data and can burst data up to 464 kbs and is highly configurable. This system is limited to 300 MB per day and will hard-stop when the limit is reached. This system is primarily used as an automatic fail-over redundancy to the Ku-Band system. Dedicated connections and access through the FBB should be communicated in the pre-cruise planning phase to ensure that system changes can be arranged. This system is fully funded by the NSF and non-NSF users must pay a day rate to use the system. The voice handset is located on the Bridge.

13.3 (1) Nera Fleet 33 (F33) INMARSAT Stabilized Antenna, Modem and Voice

This INMARSAT system uses the older generation of INMARSAT satellites and has global coverage at less than 75 Deg latitude. The system handles simultaneous voice and data and is limited to a bandwidth of 28.8 kbs. This system is wholly funded through the ship operations grant and is NOT free to use. The system is intended as a backup to other, more economical systems. The voice handset is located in the Infirmary which is a secure area of the ship.

13.4 (1) Sailor SC4000 Iridium Phone/SSAS Antenna, Modem and Voice.

This Iridium system provides global coverage from the orbiting Iridium satellite network. Global Coverage even over the Polar Regions is supported. Data transfer rate is very slow at 9.9 kbs. This system is wholly funded through the ship operations grants and is NOT free to use. The handset is located in the Bridge.

14.0 Miscellaneous

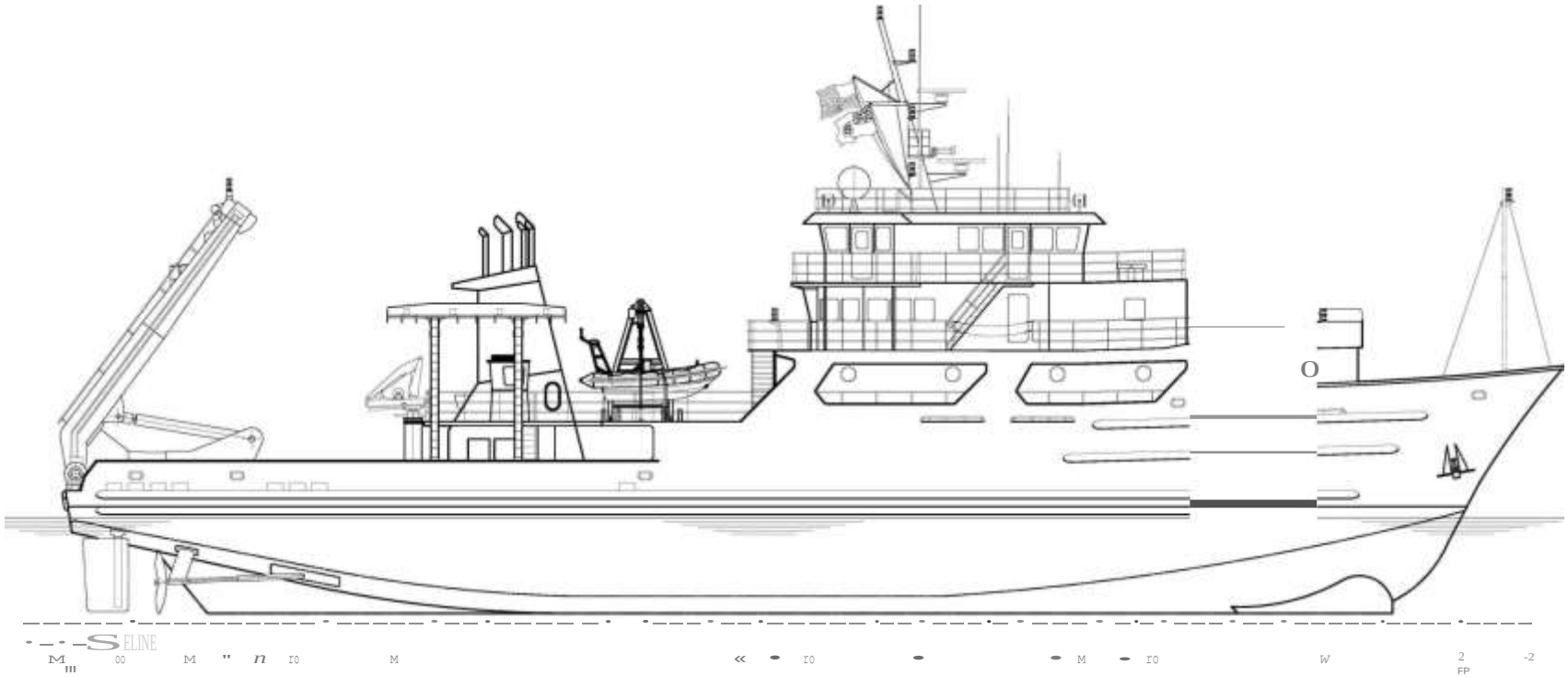
14.1 Radio Direction Finder - Freq range 110-170 MHz

14.2 Laminar flow module Envirco TT4830, 90 ft/min at full open sash

14.3 General Chemistry fume hood – 100 ft/min @ 18-inch sash height

14.4 Navigation software is made available for science use on the forward lab PC.

14.5 General Oceanics pCO2 underway sampler


O
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SELINE
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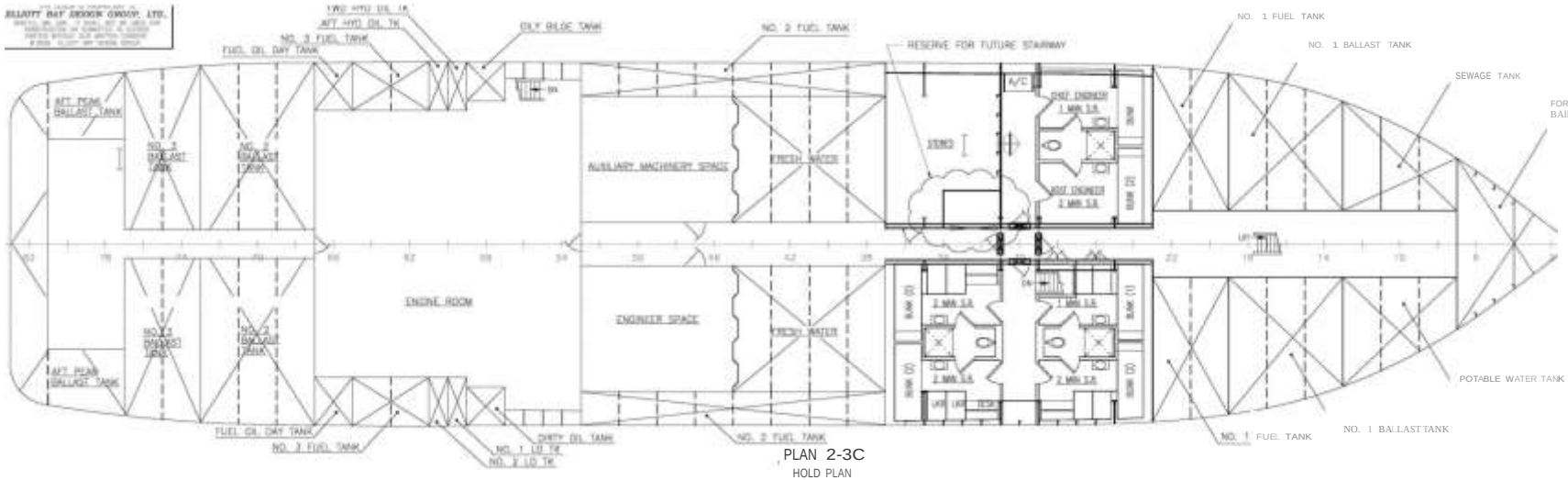
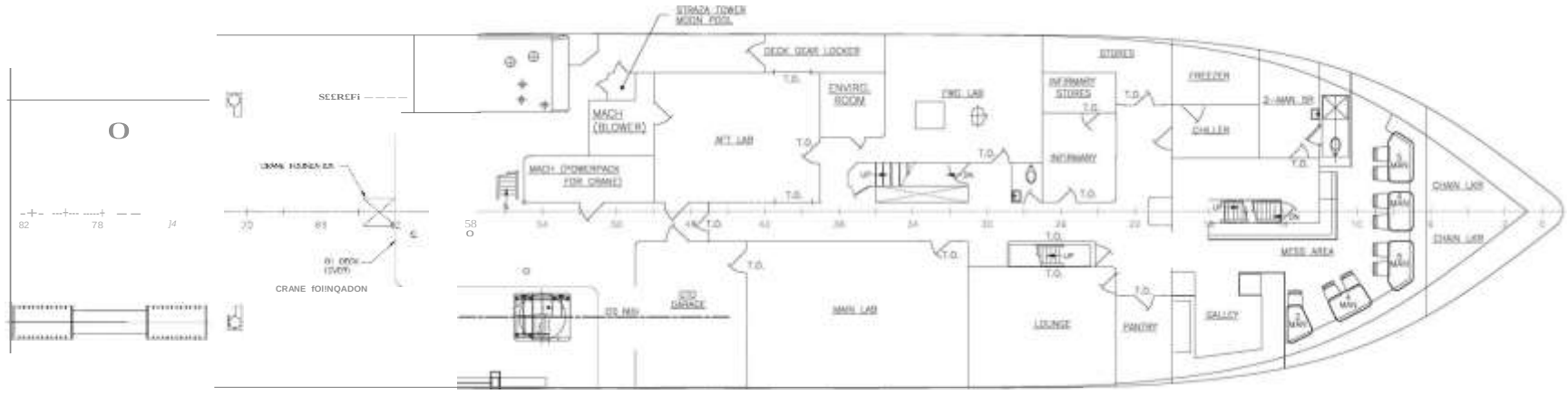


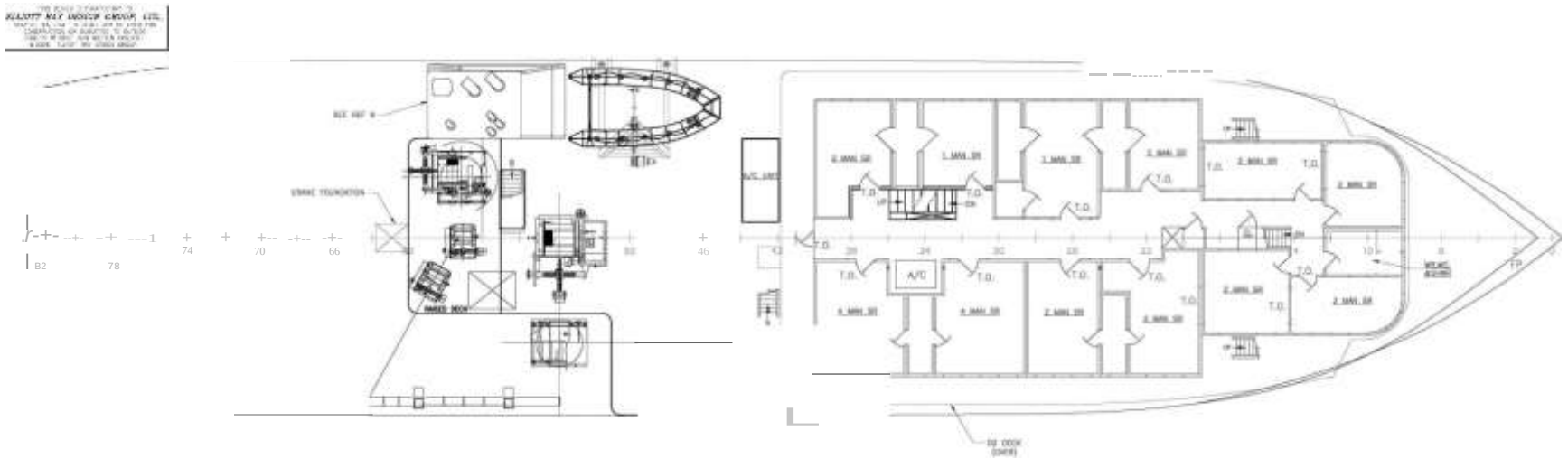
PLAN 2-3C

HOLD PLAN



PLAN 2-3A

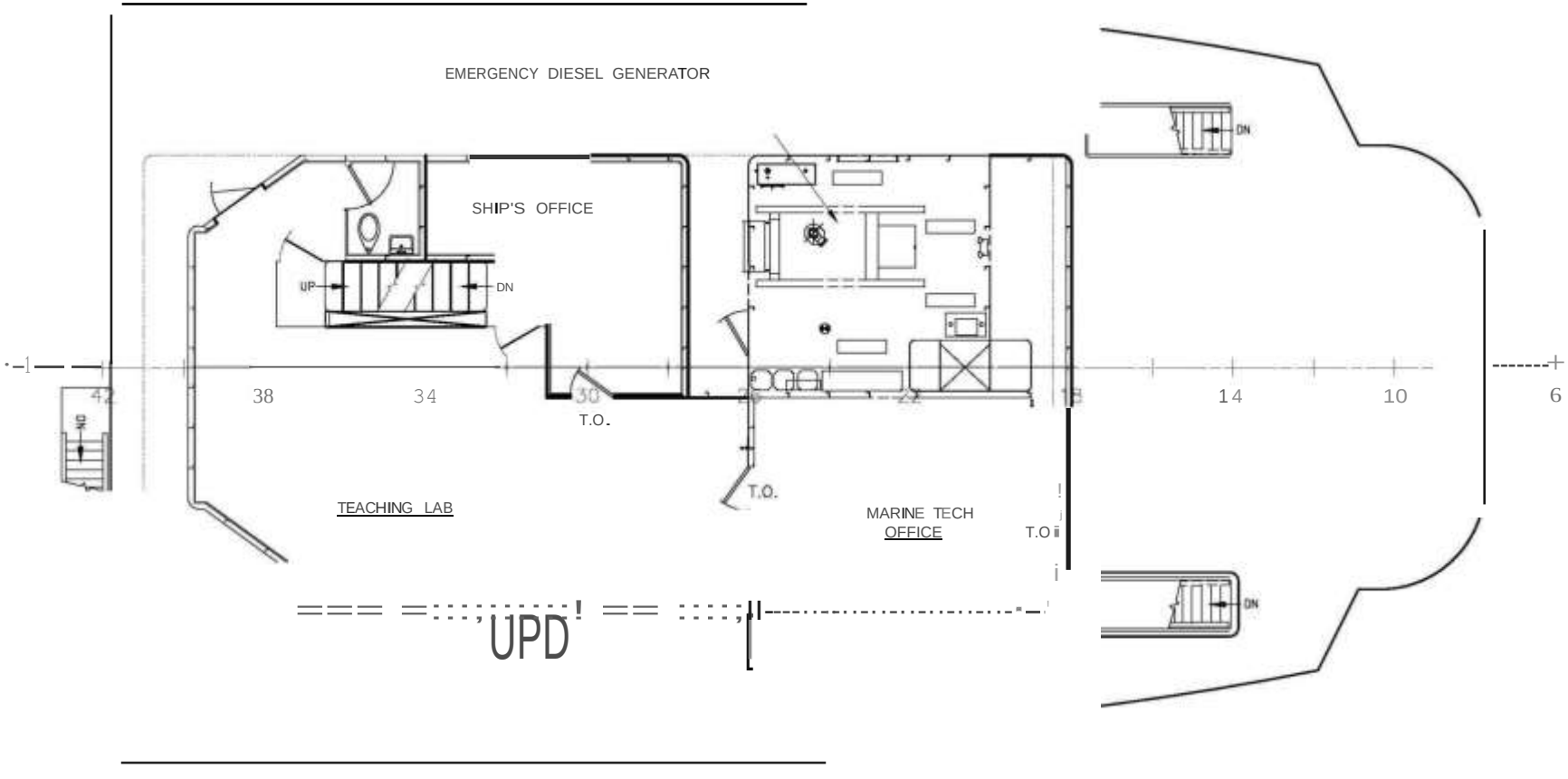
MAIN DECK SCALE
3/16" = 1'-0"



PLAN 3–3C

01 DECK

SCALE: 3/16"=1'-0"

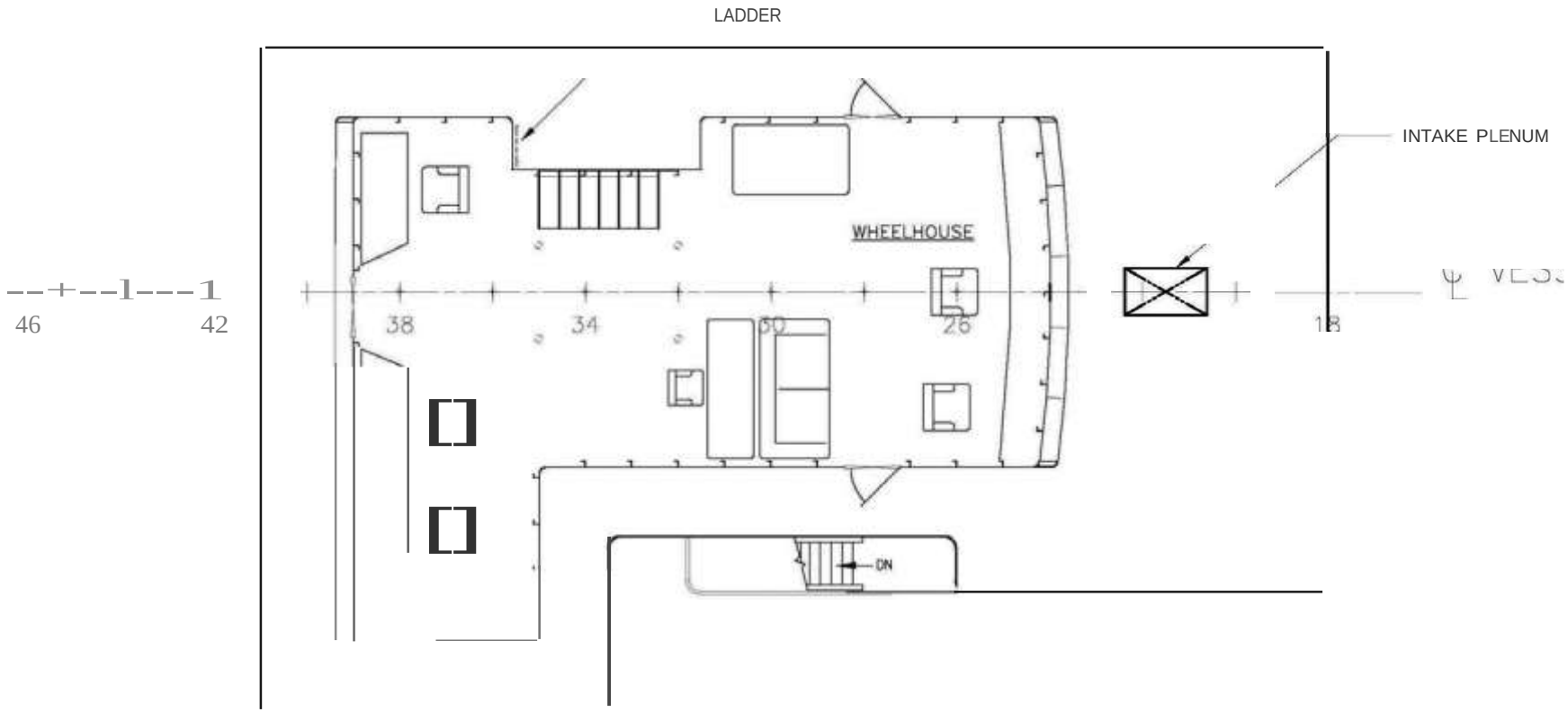


03 DECK
(OVER)

PLAN 3-3A

02 DECK

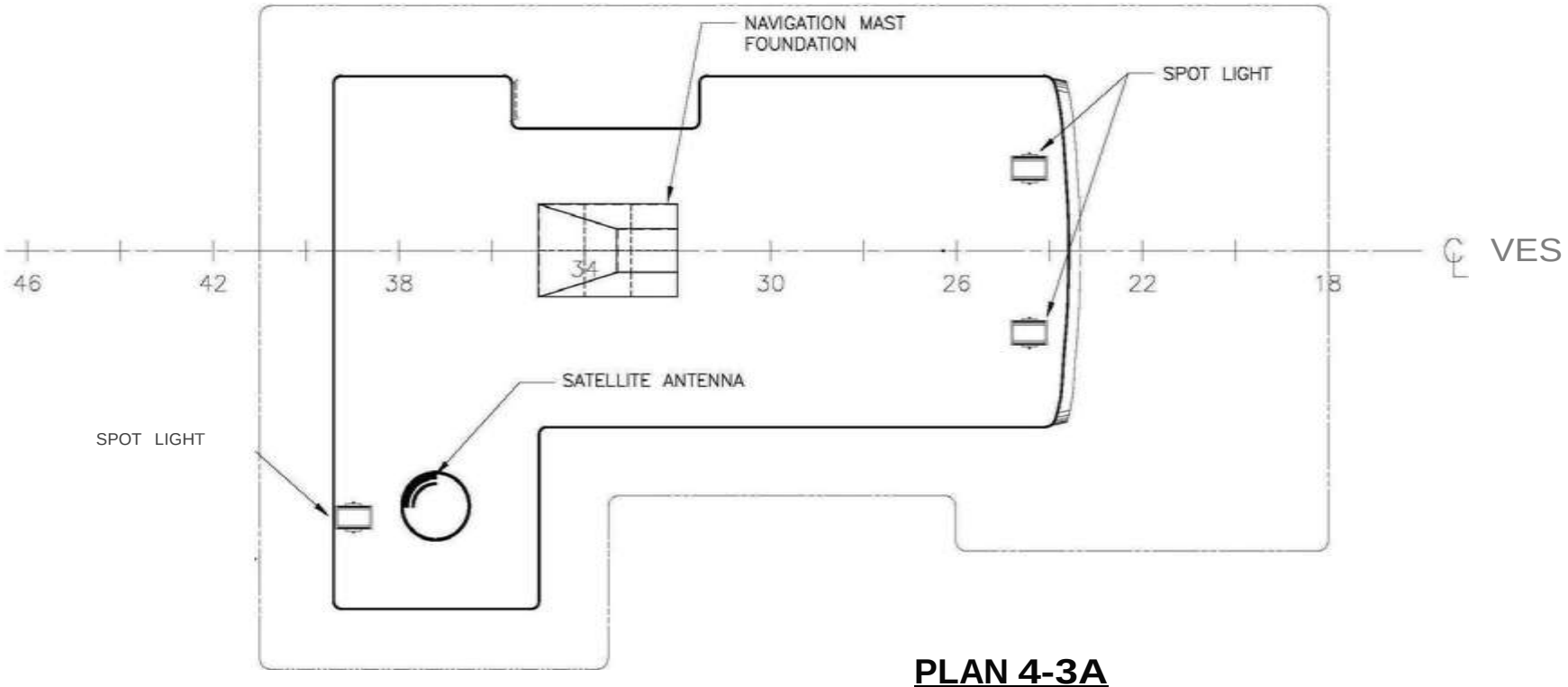
SCALE: 3/16"=1'–0"



PLAN 4-3C

03 DECK

SCALE: 3/16"=1'-0"

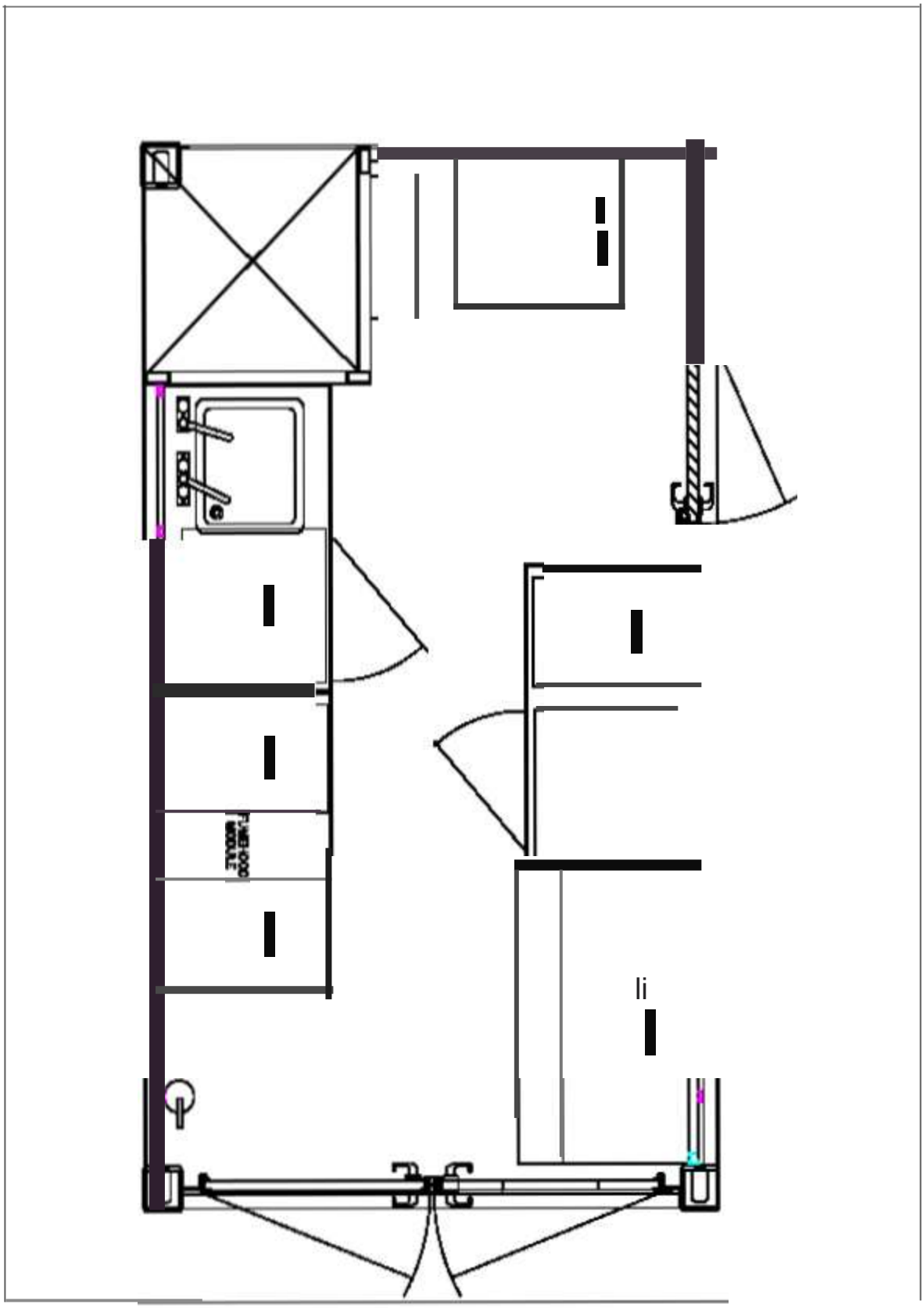


03 DECK
(BELOW)

PLAN 4-3A

WHEELHOUSE TOP

SCALE: 3/16"=1'-0"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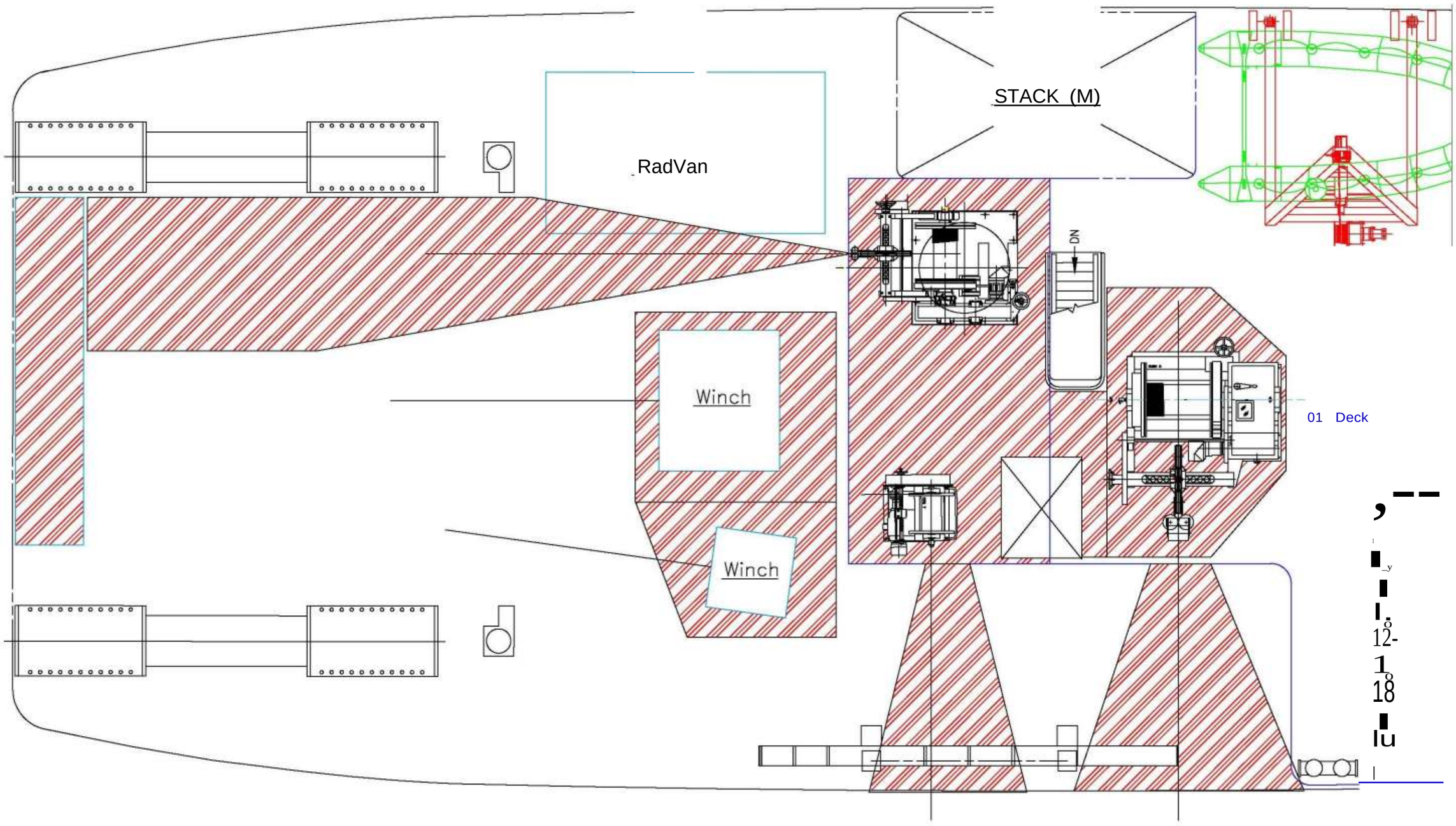

STACK (M)
RadVan
DN
Winch
Winch
01 Deck

Title:	Prepared By:	Revision No:	Section:
Hand Signals	S. Brittner	2	810
	Approved By:	Edited:	Page:
	R. Harelstad	10/08/2012	1 of 1

Weight Handling Equipment

HOIST LOAD — With forearm vertical and forefinger pointing upward, move hanel in a horizontal circle.

LOWER LOAD — With arm extended and palm downward, wave hand down and up.

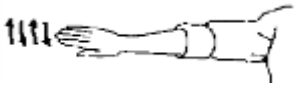
tt

BOOM UP — With arm extended, fingers clenched, and thumb pointing upward. move hand up *and* down_

BOOM DOWN — With arm extended, lingers clenched, and thumb pointing downward, move hand *down* and up.

SLEW BOOM — With arm extended, point forefinger in direction of travel

STOP — Wlth arm extended and palm downward, hold position rigidly.



EMERGENCY STOP — With arm exllendP.d and palm downwarel, move hand rapidly to right and IP.ll.

Weight handling equipm•mt includes inslailos>Cifixtures such as cranes, frames, booms and davits, as well as portable chain falls. comeabngs, sli gs, and tackles_

General safety precautlons lor weight handling eQuipment:

- Stay clear of moving equipmem such as cranes, frames.booms, and davits.
- Do not exceed the maximum capacity of the system in any of its operating configurations.
- Do not overextend the operating radius.
- Do not raise a lm1d higher than necessary to clear obstruCiions.
- Always use steadyi ng fines to prevent excessive swinging_
- Ensure crews are Qualified on the system they are operating.
- Use standard hand signals and ensure that all riggers and operators are familiar wilh the hand signals.
- *Never* leave a suspended load unattended.
- Inspect the system components prior lo and immediately atter a lif11hat nears the rated capacity of the system.
- Stay out lrom under suspended loads.
- Wear adequate foot protection.
- Wear hard hats to protect from injury.
- Be conscious of the vessel's Stability (see Chapter n).

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Note: Research Clearances are not required for research conducted from the R/V *Atlantic Explorer* while in Bermuda waters. This information is provided for any users that may be planning cruises within the EEZ of any other nation.

From the following link: http://www.state.gov/g/oes/ocns/rvc/

Marine Science Research Authorizations

(Revised September 1, 2006)

Overview

The United Nations Convention on the Law of the Sea (UNCLOS) provides that States' have jurisdiction over marine scientific research (MSR) within the 200 nautical-mile area known as the Exclusive Economic Zone (EEZ) and the territorial sea. Although the U.S. does not exercise full jurisdiction over MSR within its EEZ, the U.S. recognizes all other nations' right to regulate such activities within their EEZs and territorial seas in a manner consistent with UNCLOS.

The Department of State facilitates the transmission of MSR applications to the appropriate authorities as required by UNCLOS articles 248 to 250. The Department of State assists both the U.S. research community seeking access to foreign territorial seas and EEZs and the foreign research community seeking access to U.S. waters.

For further information on marine research application procedures and forms, see:

Authorization to Conduct MSR in Foreign EEZ(s)

Authorization to Conduct MSR in U.S. EEZ

Related Instruments

- Law of the Sea - see Article 19(2)(j) Innocent Passage; Article 56(1)(b)(ii) EEZ; Article 87(1)(f) High Seas; Part XI Deep Seabed, Article 143; Part XIII Marine Science Research, Articles 238-265; Part XV Dispute Resolution, Articles 287& 297.
- Endangered Species Act - the basis for U.S. conservation of species that are endangered or threatened with extinction throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend.
- Magnuson-Stevens Fishery Conservation and Management Act - the basis for U.S. management of fisheries within the EEZ.

- Marine Mammal Protection Act - the basis for U.S. management of marine mammals in the EEZ.
- Outer Continental Shelf Lands Act - the basis for U.S. management of MSR on the Continental Shelf.

Related Links

- Maritime Administration - Bureau in the U.S. Department of Transportation that administers clearances for U.S. Merchant Marine Training ships.
- Minerals Management Service - Bureau in the U.S. Department of the Interior that manages the nation's natural gas, oil and other mineral resources on the outer continental shelf (OCS).
- National Oceanic and Atmospheric Administration - Agency in the U.S. Department of Commerce that conducts MSR.
- National Science Foundation, Ocean Sciences - funds basic research and education to further understanding of all aspects of the global oceans and their interactions with the earth and the atmosphere.
- Office of Naval Research - sponsors science and technology in support of the U.S. Navy and Marine Corps. Founded in 1946, ONR today funds work at more than 450 universities, laboratories, and other organizations.
- University-National Oceanographic Laboratory System - an organization of 64 academic institutions and National Laboratories involved in oceanographic research and joined for the purpose of coordinating oceanographic ships' schedules and research facilities.

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